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AN ANALYSIS OF IMPLEMENTING A RENTAL POLICY
WITHIN THE DoD'S MILITARY FAMILY HOUSING PROGRAM

by

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Lieutenant, United States Navy
B.S., United States Naval Academy, 1989

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

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David R. Whipple, Chairman
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The analysis focuses on the ability of this program to continue to operate, build its inventory and compete in the local housing market by collecting rent and using a revolving fund. After investigating the program's cost and simulating setting initial rental rates, this study concludes that a rental system at the Naval Postgraduate School would provide sufficient net income and cash flow to continue to operate. Further, this study discusses several other financial implications related to alternative housing programs, political realities and revolving fund concepts that may prove beneficial to policymakers and future researchers.

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I. INTRODUCTION

A. THE ISSUE

As the United States Navy prepares for the post Cold War challenges of the future, it must do so in a period of rapidly dwindling resources. The large federal deficit experienced during the 1980's and 1990's has become a top concern of every American. As a result, Congress is embarked in an ambitious attempt to reduce federal spending. Unfortunately, the majority of these cuts have come from defense and other non-entitlement programs.

Of major concern to both the Navy and the Congressional leadership is that the rapid reductions to our fleet and infrastructure may leave the nation with a "hollow force" unprepared for the next conflict. Chief among these concerns is the effect these reductions will have on the quality of life and therefore the performance of our sailors. The 1989 Defense Management Report cited quality of life as the top priority for military leaders [Ref.1:p.11]. The current Secretary of the Navy, the Honorable John Dalton, echoed this sentiment in the Department of the Navy's posture statement:

We must manage this right-sizing with great sensitivity and a determination to keep faith with our people. If we fail, and if we lose the trust and confidence of our people; no matter what management plans and programs we put into place, no matter what mission we have, our bottom line combat readiness in the long term and the short term will decrease and our capabilities as naval forces will be reduced. Therefore, our greatest effort must be to ensure that our men and women are properly motivated, trained, compensated, and rewarded as we go through these revolutionary times. [Ref. 2:p.4]

With the current fiscal environment, defense decision-makers are faced with the task of meeting operational objectives while streamlining budgets. The Navy has already set a course to take ship levels as low as it believes possible while still fulfilling its newly established mission "...From the Sea". However, should further cuts be required to defense, the Navy must be ready to take additional cost reduction measures.

One program several government reports have cited that could yield substantial savings is the Military Family Housing (MFH) program. The Department of Defense (DoD) is the world's largest landlord. It employs 1.526 million active duty servicemembers and currently owns or leases over 300,000 units of family housing at a cost of about \$3 billion each year [Ref. 3:p.1]. The Department of the Navy (which includes the U.S. Marine Corps) is a very large family housing user with a 1994 average inventory of nearly 100,000 units and a yearly budget of over \$1 billion.

Despite being the largest landlord, the DoD has historically had a policy of relying on the private sector housing market to meet its requirements [Ref. 4:p.2]. Of those servicemembers who have families and live in the United States, two-thirds currently use cash allowances totaling over \$4 billion annually to rent or buy housing in the private sector. The remaining third forfeit their cash allowances and receive DoD assigned housing.

The DoD's reliance on the private sector for housing has proven to be a sound policy from a fiscal perspective. "The cost, over the long run, of DoD housing provided to members of the armed services is, on average, approximately 35% greater than the cost of private sector

housing that is chosen by comparable military families in the same locations." [Ref. 3:p.1] This is supported by the fact that allowances forfeited by servicemembers cover only 60% of the cost of military housing. It is this higher cost that has caused the DoD to re-think its housing policy. In an era of cost consciousness, one must ask if housing provided to only one-third of our Navy families (only 15% of the total Navy population) is a good investment at an additional 35% cost.

The DoD has recognized the housing program has problems and concluded in a recent review that "the housing allowance has come to present the Department of Defense with one of its greatest, most persistent compensation challenges." [Ref. 5:p.7] The Department and other government agencies have made recommendations ranging from maintaining the status quo to expanding MFH, eliminating MFH, cutting back MFH but offering newer units, and others. Perhaps the most radical recommendation, and the focus of this thesis, is instituting a quasi-rental market system within military housing.

Advocates of this quasi rental market system include the Congressional Budget Office (CBO) and the Department of Defense as expressed in several Defense Management Report Issues. Although proposals have some differences, their basic concepts are the same. By requiring housing complexes to compete with the private sector on a rental basis, the military would be able to reduce its inefficiencies by closing unnecessary complexes in areas where the value of DoD housing to servicemembers is less than the cost of providing that housing.

B. OBJECTIVES AND METHODOLOGY

Accepting that there are inefficiencies in the current DoD military family housing program, this thesis examines a specific solution outlined by the Congressional Budget Office in its 1993 study titled, "Military Family Housing in the United States." It will attempt to determine the effects of a DoD rental system on a housing program with the purpose of identifying possible financial implications for the Department of Defense and the housing management. Specifically, would a housing program be able to maintain its ability to operate, rebuild its inventory, and be likely to compete in the local housing market?

The first objective will be to determine what the actual direct and indirect costs are to operate a housing complex. The second objective will be to simulate collecting rents from current tenants in order to determine its expected revenues. The third objective will be to analyze its expected net income by determining if the revenues collected would cover the costs of operations, maintenance and recapitalization of assets. The fourth objective will be to analyze a program's cash flows to determine if it can become self-sufficient. The fifth objective will be to analyze if a rental system implemented in a typical housing program would produce a net savings or net loss to the federal government.

C. RESEARCH QUESTION

If the DoD implemented a rental system within a single military family housing complex, could this complex continue to provide and maintain adequate housing and if so, would this produce a net loss or net savings to the U.S. taxpayer?

D. SCOPE

This study is limited to the La Mesa Village MFH at the Naval Postgraduate School (NPS), Monterey, California. Focus is placed on the financial implications of implementing a DoD rental policy at NPS. It is not the intent of the thesis to determine if a rental policy would be effective for the entire Department of Defense, but lessons learned and insights from the study will be provided for future researchers. Nor is it intended to address the adequacy of the current system or to define officer preferences for different types of housing.

E. LIMITATIONS

At the time of this study, the Fort Ord Army base is in the process of closing and some of its facilities are being turned over to the Naval Postgraduate School, including the management of 600 housing units to be used by students. Although the Army is still responsible for Fort Ord housing, several NPS students are being assigned quarters on the base. Despite these recent housing changes, it is not the intent of this thesis to determine the effects of this base closure on the demand for NPS or Monterey housing.

F. ASSUMPTIONS

The analysis for implementing a rental system within a military family housing project will be based on a Congressional Budget Office recommendation and Defense Management Report Document 966. It is beyond the scope of this thesis to analyze the effectiveness of these two recommendations. Rather, it is assumed that DoD eventually adopts the

proposed recommendation to implement a rental system and this thesis is the reaction of one housing complex to the change.

G. RESEARCH SOURCES

This thesis is conducted using primarily archival research at the Naval Postgraduate School and investigative research at the La Mesa housing complex. The history and background of the present DoD housing program were found in library material in the NPS library. Past DoD recommendations contained in Defense Management Report Documents were provided by Retired RADM Richard Milligan, Conrad Chair at NPS. Historical data is used to explain current DoD housing policies and to show problems requiring a policy change. The actual costs to operate La Mesa Village were obtained through personal interviews with the housing staff at La Mesa Village.

H. ORGANIZATION OF THE STUDY

The thesis is divided into five chapters including this introduction. Chapter II provides the history of military family housing, in order to give a better understanding of DoD's current housing program, which is covered in Chapter III. Chapter IV describes the Congressional Budget Office's recommendation for implementing a rental system within the military family housing program. Chapter V presents the findings and analysis from this study. Chapter VI provides a brief summary, conclusions and lessons learned from this thesis.

II. HISTORY OF MILITARY FAMILY HOUSING

A. EARLY HISTORY

In order to gain an appreciation for current housing problems, as well as to understand the Department of Defense's justification for its housing policies, a brief review of the history of military family housing is required. The issue of how to house our soldiers goes back to the very beginnings of this nation. Servicemen were originally farmers and merchants and lived at home while they served. Therefore, there was not a need for organized housing. Yet, as the military grew from a revolutionary militia to an established Army, Congress realized it must care for individual soldiers. The first act of legislation directly related to providing for individual soldiers was in 1782, when Congress authorized a Major General to be provided one four horse drawn covered wagon and one two-horse drawn covered wagon. [Ref. 6:p.3]

Providing for entire families was apparently not an issue in the early days of the military. When Army soldiers went into the field they constructed tents and other types of temporary shelter. Navy sailors lived primarily onboard their ships, a practice that continues today. Although both services did "requisition" local community housing on occasion, for the most part, servicemembers were expected to be separated from their families. If they chose to have family members accompany them, then family housing was up to the individual soldier.

B. THE FIRST MILITARY FAMILY HOUSING

Most of the first family quarters were built for senior officers because their positions required them to be close at hand. The Navy's first set of senior officer quarters was built in 1802 for Captain Thomas Tingey, the first Commandant of the Washington Navy Yard. The Tingey house, declared an historical building, remains today as the residence of the current Chief of Naval Operations. The Navy built similar homes in many of the other naval bases such as Norfolk, Philadelphia, Brooklyn, Boston, and Portsmouth. [Ref. 6:p.4] "These quarters were built for the benefit of the Government as an essential element of military discipline and protection rather than for the convenience and comfort of the occupant." [Ref. 6:p.3]

By the early 1800's, the United States was expanding and on-station quarters began to be constructed in forts and installations. Some of the first military family housing began in the forts where officers were allowed to bring their families to live with them. The rules for these quarters were very simple, "a lieutenant received two rooms, a captain three, a major four and so on." [Ref. 7:p.4] As space was limited any officer not able to live in the fort was allowed to rent housing in the local town until room became available. Not addressed at this time was the inequity of those living in the private sector having to purchase housing out of their basic pay while those on-base did not. [Ref. 7:p.10]

C. THE FIRST HOUSING ALLOWANCES

1. Housing Allowances During the War of 1812

The military first addressed the issue of allowances to augment basic pay in 1813 when the Army authorized a quarters allowance. This action was necessary because of the build-up caused by the War of 1812. During the war, the Army increased from 6,686 men in 1812 to 19,036 men in 1813. The Army had actually tried to recruit more men for the war but was unsuccessful. As a result of this recruiting failure, Congress for the first time, used allowances for quarters as an incentive for service. The incentives were successful and the Army was able to recruit and sustain an Army of 27,000 men until the Civil War. [Ref. 6:p.4] Prior to the Civil War, however, the military housed very few military families. For the most part, servicemembers were expected to either remain single or leave their families at home while they served.

2. Allowances During the Civil War

During the Civil War the Union Army and Navy rose from a strength of 76,000 to over one million men. In 1866, after the war, the standing force was reduced, but remained substantially larger than at the start of the war. This larger force required revised military family housing policies. In 1866, Congress repealed an act of 1835 which had eliminated the allowance for quarters, heat and light previously available to officers. To re-enact these allowances the Secretary of the Navy, Gideon Wells, issued General Order 75 which "established a family quarters allowance equal to one third of pay for officers who could not be provided with family quarters on shore stations." [Ref. 6:p.4] This legislation set a new precedent. For the

first time, quarters allowances were now related to base pay. In the past they had been set at specific rates for different areas.

3. The Basic Allowance for Quarters

In 1872, the Basic Allowance for Quarters Act was passed which provided five dollars a month per room to any officer who was unable to get military housing. It did not, however, include an allowance for enlisted personnel. This Act is significant because set a precedent still valid today, "that the military department will provide its members a house or money in-kind". [Ref. 7:p.10] The statement "in kind" is often used to mean that the allowance should be sufficient to obtain quarters off base comparable to those on base.

4. Allowances During World War I and World War II

As the nation began to prepare for World War I, Congress enacted an important benefits program. In August 1916, Congress passed an appropriation which provided \$2,000,000 to the military to support the families of enlisted personnel who were recruited or drafted. This was needed to compensate those who gave up higher paying jobs to join. Compensation for families was limited to not more than \$50 per month, and "not more than the difference between a serviceman's pay and what he had been contributing to the family at the time of his recruitment or draft." [Ref. 6:p.6]

The system of providing housing allowances for rent, heat and light at varying rates ended in 1935. The Senate Subcommittee for Pay and Allowances for Fiscal Year (FY) 1936 considered the uncapped rates too expensive, and changed housing compensation to a "fixed" allowance. Regardless of local housing prices, the new allowances had a ceiling of \$20 per month. The new allowance did not include compensation for heat

and light expenditures. "This marked the end of market responsive allowances until the introduction of the Variable Housing Allowance (VHA) program in 1980." [Ref. 6:p.6]

5. Allowances for the All-Volunteer Force

The DoD housing allowance program required a major renovation when the military shifted to an all-volunteer force in 1973. In order to encourage people to enlist the government had to consider increasing incentives such as housing allowances. For the first time, enlisted personnel were offered BAQ and given wider access to on-base housing. To demonstrate the magnitude of the policy change, in 1974, 29% of the family housing units owned by DoD were set aside for officers. But, by 1991 only 18% of family housing was used by officers.

D. CONSTRUCTION OF MILITARY FAMILY HOUSING

1. Early Housing Construction

By the turn of the 20th century, an extreme shortage of housing existed as a result of the large number of officers who took their families West. The housing shortage made it apparent to the Congress that it would not be feasible to build houses for every married military member. Congress, therefore, developed a public policy, still in effect today, that the "prime source of housing for military families is the adjacent private community". [Ref. 7:p.11] When housing construction was required it was focused in areas where the surrounding community was unable to meet the housing demands of the military.

The policy of providing on-station quarters for only key personnel continued into the early 1900's. In fact, up until the beginning of World War I, the Navy inventory consisted of only 289

houses, all of which were designated for officers. It was not until 1915 that the government began to recognize the family housing needs of enlisted personnel. In 1915 an act was passed that allowed enlisted men an allowance for quarters at a rate of \$15 a month. [Ref. 6:p.5]

2. Housing Construction Before World War II

Although some building of family homes was conducted during the years leading up to World War I, mass construction of housing on bases did not begin until 1939 when the Lanham Housing Act was introduced. This Act allowed smaller and more shoddily constructed homes to be built to house those individuals building the many bases that would be used during World War II.

Immediately prior to World War II, the total armed forces housing inventory was 25,000 units [Ref. 6:p.7]. However, World War II required housing for many more individuals than just key personnel. To meet these new requirements, the first "Defense Housing" was authorized by Public Law 76-671 of 28 June 1940. The housing was built by civilian contractors but leased and operated by the Navy. By 1941, the Navy had been given a total of \$56,822,500 to construct this housing. The housing surge did not last long when much of the mass housing construction was halted in 1942 to support the war effort. The only housing that continued was for barracks at training sites. [Ref. 6:p.7]

3. Housing Construction During World War II

Most servicemembers were encouraged to leave their families at home during World War II. However, as the war progressed morale began to drop because of family separation. There was not enough housing for families to reunite when servicemembers were back in the United States for 30 day furloughs. The armed forces faced an incredible challenge

to build housing for its personnel considering the size of the force. In 1939, the Army and Navy had a strength of 335,000, but by 1945, that number had grown to 12 million. The Navy's solution to the problem was the "Homoja" program. In 1943, the Navy began to build transient quarters on naval bases throughout the United States for Naval personnel and their families.

Homoja units were 960 square feet metal Quonset Huts with living room, kitchen, bath, and bedrooms, and were completely furnished for light housekeeping. Because of their spartan nature, Homoja units were not considered suitable for permanent occupancy, so residence in these units was limited to 60 days. A total of 6,285 Quonset Huts were built before the war's end. [Ref. 6:p.8]

When the war in Europe ended, thousands of civilian and military personnel transferred to the Pacific coast to gear up for the war with Japan. This influx caused another housing crisis. In response, the Navy-Federal Public Housing Agency's Defense Construction Program provided funding for over 10,000 family housing units in 70 different locations. These units were "standard design houses consistent with best livability, low cost, and construction speed." [Ref. 6:p.9]

4. Housing Construction After World War II

After World War II, most U.S. servicemembers returned home to their families and military housing construction remained relatively inactive. However, the war had brought several changes in the make-up of Naval personnel. Numerous technical innovations developed during the war required the retention of specially trained enlisted personnel. The occupation of Japan and several European countries also required a Navy larger than pre-WWII levels. Consequently, despite large overall cutbacks, the Navy maintained a post-war manning level of about 1.5

million, about four times its pre-war strength. Additionally, the Navy was now made up of a much higher percentage of married personnel.

At first, the military thought that it would be possible to build enough housing to take care of all military families. In 1948 the Hook Commission, an advisory group appointed by the Secretary of Defense, believed that housing allowances should be the exception rather than the rule. They also believed that there was a strong correlation between personnel living on-base and military readiness. It became apparent, however, that it would not be possible to house a standing Army as large as the post WWII Army. As a result, DoD continued to rely on its policy of using private sector housing for the majority of military members. [Ref. 3:p.8]

5. Housing Construction During the Cold War

Before the war, the relative insignificance of the Navy's family housing program was attributed to "the relative stability in the level of military personnel, their longer tenure of assignment at an installation, and the smaller ratio of married personnel in the Navy ... with a less frequent relocation of families." [Ref. 6:p.9] However, to meet the post-war demand for family housing, Congress passed the Wherry-Spence Act and authorized 60,000 units in its first year. Of these, the Navy was authorized 15,000 at 23 shore installations.

The Wherry program was unique because it authorized privately financed housing projects to be constructed on government owned land. The land was to be provided to private project sponsors who would arrange financing (under FMA insured mortgages); construct, and then operate the projects. The military then leased the projects back from the sponsors. [Ref. 6:p.9]

By 1954, the Wherry program had constructed 83,000 units at an average cost of \$9,000 each. The Wherry Act helped solve the Navy's housing

problem but many criticized the program because the units were of questionable quality.

By 1955, the military family housing inventory had grown to approximately 224,000 units. "Of these units, 47,000 were Defense housing units and were considered inadequate, 48,500 were temporary, 87,500 were Wherry units, and the remainder were other permanent units." [Ref. 6:p.10] As a successor to the Wherry program the Congress passed the Capehart Act. It was similar to the Wherry program in that it authorized the construction of military family housing on government owned land by contractors who obtained private financing. The Capehart program was different in that the government took title and assumed the mortgages and operation of the housing once completed. During the first year 100,000 units were authorized over a five year period at an average cost of \$13,500 per unit. In 1963, at the end of the program, a total of 104,900 units had been built.

The military family housing built during the 1950's and 1960's makes up most of the current DoD inventory. Some housing was constructed by Secretary of Defense McNamara during the mid 1960's. His prime justification for requesting additional housing units from Congress was because he believed the existing units were in poor condition and that too many families were separated because of a housing shortage. After this last housing build-up, which added only a modest amount of a new units, housing construction and policy remained relatively inactive.

This chapter gave a brief overview of the history of the DoD's military family housing program. Chapter III describes where this program is today.

III. THE CURRENT DOD MILITARY FAMILY HOUSING PROGRAM

A. MILITARY FAMILY HOUSING APPROPRIATIONS

The DoD military family housing program is funded by an annual Congressional appropriation. An appropriation is a legal statute that provides budget authority for the military services and other federal agencies to incur obligations and to make payments out of the Treasury. Appropriations are necessary for DoD to operate its over 300,000 units within the continental United States at an annual cost of over \$3 billion. Table 1 [Ref. 3:p.2] shows the current DoD housing inventory.

TABLE 1:TOTAL DOD FAMILY HOUSING UNITS WORLDWIDE

	UNITED STATES	FOREIGN	TOTAL
OWNED	305,000	99,000	404,000
LEASED	8,000	27,000	35,000
TOTAL	313,000	126,000	439,000

Table 2 breaks down the number of families that live in military housing by service, revealing that the Navy actually houses a smaller proportion of families than its sister services.

TABLE 2:PERCENTAGE OF FAMILY HOUSING BY SERVICE

SERVICE	PERCENTAGE
U.S. NAVY	20%
U.S. MARINE CORPS	29%
U.S. ARMY	34%
U.S. AIR FORCE	34%

The Navy may house a smaller percentage of families because of a history of long deployments away from families or because housing is more available in seaports than in isolated Army and Air Force bases.

[Ref. 2:p.5]

Funding for Navy housing comes from an appropriation titled Family Housing, Navy and Marine Corps (FH,N&MC). FH,N&MC is broken down into two categories, Construction and Operations & Maintenance. The Operations and Maintenance (O&M) account provides funding for the cost of housing management, appliances, services, leasing, repairs and utilities. It has a one year obligation period which means that funds for a given year can only be obligated in that year. The Construction account provides funding for the planning and construction of new units and housing improvements to existing units. Unlike the O&M account, Construction has a five year obligation period to allow for the time consuming process of awarding contracts and completing construction.

Supported by the FH,N&MC appropriation, the Navy owns and operates nearly 70,000 units. Table 3 [Ref. 8:p.58] shows the Department of the Navy's budget and spending plans from 1993 to 1995.

TABLE 3:DEPARTMENT OF THE NAVY MFH BUDGETS 1993-1995 (m \$000's)

	1993	1994	1995
NAVY			
CONSTRUCTION	284.9	345.1	180.7
<u>O&M</u>	<u>567.2</u>	<u>669.0</u>	<u>747.4</u>
TOTAL	\$852.1	\$1,014.1	\$928.1
MARINE CORPS			
CONSTRUCTION	94.0	25.1	48.6
<u>O&M</u>	<u>98.4</u>	<u>103.1</u>	<u>106.2</u>
TOTAL	\$192.4	\$128.2	\$154.8
<u>NEW CONSTRUCTION</u>			
NAVY PROJECTS	11	6	1
USMC PROJECTS	3	0	1
<u>NEW CONSTRUCTION</u>			
NAVY UNITS	1,279	1,375	136
USMC UNITS	600	0	196
<u>AVERAGE # UNITS</u>			
NAVY	70,172	69,384	68,560
USMC	22,864	23,168	23,437

Annually, each service department must develop a budget request for their anticipated MFH expenditures as a part of the overall service budget request to Congress. The number of units constructed with appropriated funds actually remained steady throughout the 1970's, but then declined in the 1980's when alternatives to appropriated funding, such as Section 802 Lease's, became more desirable.

Although "quality of life" issues have gained much attention in the 1990's, family housing construction has not increased as steeply as many experts believe necessary. The reason for this is "partially because of tight budgets and partially because of a reluctance to modernize or build units at bases that may end up being closed." [Ref. 9:p.60] Table 4 [Ref. 10] shows the recent trend in MFH construction appropriations.

TABLE 4: MFH CONSTRUCTION APPROPRIATION TRENDS
(all amounts in \$ million's)

YEAR	ARMY	NAVY	USAF	TOTAL
83	127.8	114.7	143.9	386.4
84	172.7	68.0	111.4	352.1
85	143.2	117.0	181.1	441.3
86	249.1	133.0	173.4	555.5
87	357.6	171.5	110.8	639.9
88	331.0	238.4	163.3	732.7
89	214.8	244.8	186.6	646.2
90	88.3	130.6	127.1	346.0
91	85.6	175.0	169.2	429.8
92	172.7	285.8	217.8	676.3
93	161.9	378.9	250.0	790.8
94	228.9	370.2	187.0	786.1

B. HOW THE NAVY PLANS ITS FUTURE HOUSING NEEDS

Military housing is provided by appropriations from Congress. However, how the military decides what its present and future needs and how the Congress develops its funding levels is a fairly complicated process. Construction for MFH is authorized by Congress only after a

shortage of housing exists or only in areas where the cost of housing is unreasonably high. In order to determine which areas are suitable for construction a market analysis of that area is conducted.

According to the DoD, the market analysis has become the preferred document for inclusion into the President's budget for military construction, and when requesting Congressional authorization to undertake a public/private venture. The market analysis' thoroughness is vitally important because it determines that no alternative means, other than military construction, is available to alleviate the current family housing shortage.
[Ref. 11:p.17]

Each report contains the demand, affordability and availability for civilian and military housing. Once a determination has been made that no other alternative, except to build MFH, exists, the project enters the military's planning system.

Evaluating the needs of family housing is done through the Department of the Defense's process called the Planning, Programming and Budgeting System (PPBS). During the first PPBS phase, Planning, broad national security objectives are considered in order to develop force structures to counter threats to national security. During the Programming phase strategic plans are transformed into programs defined in terms of forces, personnel, material, and dollars. The Budgeting phase translates these programs into biennial funding requirements.

During periods of rapid defense growth, such as the 1980's, it is relatively easy to match what is needed by the services with what the Congress is willing to spend. However, during tight fiscal years this process is much more difficult. During the Cold War and the Reagan build-up, the Navy, perhaps rightly so, concentrated a large portion of its budget to building a large Navy.

C. HOUSING CONSTRUCTION ALTERNATIVES

1. Military Construction

Military Construction (MILCON) is the usual method for building family housing. In order to obtain military construction authorization it must be shown that the local civilian housing market cannot meet the needs of the military community. MILCON funded housing is built primarily by private firms under the supervision of the Army Corps of Engineers or the Naval Facilities Engineering Command. In recent years, military construction funded housing has been difficult to sell to Congress because of cost and the constrained budgetary environment.

2. Section 801 Program

In 1984, the military began experimenting with alternative methods of constructing housing in order to "reduce the family housing deficit." [Ref. 7:p.15] Specifically, Sections 801 and 802, of the Military Construction Authorization Act were enacted to provide low cost alternatives to MILCON.

Section 801 authorizes the government to contract with local businesses for family housing units built to service standards. Under this program the government makes all lease payments to the contractor, maintains the units and makes all assignments to quarters. Similar to MILCON, tenants do not pay rent but instead forfeit their housing allowances. However, to get an 801 lease the housing project must save at least 5% over MILCON. In recent years, however, the 801 program has been considered all but dead because Congress has been unwilling to write the specific budget line items required to secure an 801 project.

3. Section 802 Program

Section 802 instituted a Rental Guarantee Program in 1984. This program, similar to the Section 801 program, gives a guarantee that the government will maintain a minimum occupancy rate of 97% over a twenty five year period in exchange for affordable rates and priority placement to military families. If there is an insufficient number of military renters, unoccupied units can then be rented to civilians.

Like the 801 program, for a project to be approved it must cost less than military construction. However, under an 802 lease, the units can be built to either DoD or local standards and are managed and maintained by the developer, not the government. A major difference between 802 and 801 is that servicemembers do not forfeit their housing allowances but instead pay monthly rent. The initial rent is set to comparable rents charged in the local market area. Like 801 projects, a separate line item Congressional authority is needed.

4. 2667 Lease Program

Another alternative to military construction is the Title 10 2667 Lease Program. It is similar to the 801 and 802 programs in that private firms build military housing. Similar to the 802 program, units do not have to be built to DoD specifications thus saving the government money and manhours. [Ref. 1:p.28] Another very important difference is that construction under the program does not have to conform to the Davis-Bacon Wage Act. This act requires use of local labor wage rates based primarily on the local union rate which can increase construction costs by up to 15%. One of the most successful construction projects under the 2667 Lease Program is the Sun Bay Apartments at Fort Ord, California.

The creation of alternatives to military construction funded housing is an indication that DoD is shifting its policies in order to maximize the advantages of market forces. If DoD implements a rental policy within its MFH program, the 801 Program will probably be discontinued. However, lease agreements such as 802 and 2667 should assist housing managers secure low cost construction contracts. Keeping construction costs low will be of paramount importance if housing managers are to be able to compete with local housing.

D. HOUSING ALLOWANCES

1. Introduction

As was detailed in Chapter II, housing allowances have changed considerably over the past 200 years. Housing allowances are very expensive to the federal government, with DoD spending about \$6 billion each year. Today, in addition to basic pay, members of the armed services can be eligible for up to 34 different allowances and 55 special and incentive pays. The two most common allowances are for food and housing. Although basic pay is taxed by the federal government, housing and food allowances are tax-free.

The objective of housing allowances is to make "suitable (acceptable and affordable) housing" available to every servicemember living outside MFH. "Acceptable housing is within 1 hour's commuting time, meets minimum square footage requirements and basic structural soundness tests, and has water, heat, and electricity; affordable housing does not require servicemembers to exceed specified out-of-pocket costs." [Ref. 12:p.1] Those choosing to live in government housing forfeit these housing allowances. However, as previously

stated, the majority of military families do not live in government provided housing. Table 5 [Ref. 3:p. 7] breaks down the percentages of military families that live in government and private housing.

TABLE 5:HOUSING PATTERNS OF MILITARY FAMILIES IN THE U.S.,1991

PAYGRADE	IN DOD HOUSING	IN PRIVATE SECTOR	OWN PRIVATE SECTOR	NUMBER OF FAMILIES
E1-E3	20%	76%	4%	76,000
E4-E6	35%	41%	24%	552,000
E7-E9	26%	20%	54%	152,000
W1-O3	29%	30%	41%	109,000
O4-O5	18%	20%	62%	73,000
O6	26%	15%	59%	13,000
O7 AND ABOVE	67%	0%	33%	1,000
ALL GRADES	30%	36%	34%	946,000

2. Who Is Eligible for Housing Allowances?

Current housing allowances are actually two separate allowances: the Basic Allowance for Quarters (BAQ) and the Variable Housing Allowance (VHA). According to Title 37, section 403 of the United States Code, "a member of a uniformed service who is entitled to basic pay is entitled to a basic allowance for quarters." [Ref. 7:p.24] Servicemembers with dependents receive higher BAQ allowances.

In the late 1970's, BAQ was insufficient in many areas to cover the full cost of housing. Rapidly rising housing costs began to erode the buying power of military housing subsidies. To narrow the gap, a geographic adjustment called the Variable Housing Allowance (VHA) was created. A member of a uniformed service entitled to BAQ is entitled to a VHA whenever assigned to duty in a high cost area of the United States. An area is considered to be a high cost housing area whenever the average monthly cost of housing in that area, for members serving in the same paygrade as that member, exceeds 115% of their BAQ. After

1986, if a person received more in BAQ and VHA than they spent on housing they were required to give back half the overpayment.

3. How Are Housing Allowances Adjusted?

The total of BAQ plus VHA was intended to cover 85% of the nationwide median housing costs so that the military member would only have to pay 15% of the cost of living off base from his or her basic pay, also known as "out of pocket costs". However, since 1981 the percentage of housing costs not covered by housing allowances has risen from 10% to 20%. While Congress tried to limit out-of-pocket costs to 15%, annual adjustments have not been effective and out-of-pocket expenses continue to rise. [Ref. 3:p.9]

VHA rates are established for areas based on data from the national housing survey which is conducted by the U.S. Census Bureau [Ref. 7:p.25]. This survey collects data on the housing expenditures of military families in the different housing areas. Based on the results of the survey, an area's allowance rate may be increased or decreased. BAQ rates are increased in two ways: under amendments to the United States Code and through Congressionally authorized increases to military pay. Although housing allowances were increased on January 1, 1994, they did not increase enough to offset a 3.1% increase in housing costs. [Ref. 9:p. 60]

E. MILITARY FAMILY HOUSING PROBLEMS

1. Inefficiencies of Appropriations Funding

Although military family housing has been funded by Congressional appropriation for many years, not all experts agree that this is the most cost effective method. Inherent in the Congressional

process are inefficiencies such as congressmen lobbying for housing construction in their district regardless of whether there is a need for the new housing. For example, included in the 1992-1993 Defense Authorization Bill were barracks improvements at Forts Hood and Bliss in Texas. Neither military construction account was requested by DoD. [Ref. 13:p.70]

For reasons such as these, funding by appropriation has been cited as an inefficient way of providing MFH. Funding by appropriation keeps important decision making far removed from those most involved with the process, the housing management. "This method of funding, along with various restrictions on contracting, does not allow the local installation to run DoD family housing in the most cost effective fashion." [Ref. 4:p.14]

2. High Cost of Constructing and Operating Units

The government, without the aid of market forces, has been unable to provide housing at lower cost than the private sector. "The cost over the long run of the DoD housing provided to members of the armed services, on average, approximately 35% greater than the cost of the private sector housing that is chosen by comparable military families in the same locations." [Ref. 3:p.xi] In addition, the allowances forfeited by servicemembers accounts for only 60% of the cost to provide military housing.

DoD housing is built primarily by private firms under the supervision of the Army Corps of Engineers or the Naval Facilities Engineering Command. Construction of military housing is not competitive with private sector housing, however, because of additional government regulations governing DoD units but not private units. For

example, the governmental process of planning, doing market analysis, gaining Congressional approval, preparing bids, construction and inspection takes DoD units up to 10 years to complete. Table 6 shows the differences in time frames for the housing construction process between the government and the private sector.

TABLE 6: PRIVATE SECTOR VS MILITARY CONSTRUCTION TIME-FRAMES

EVENT	GOV.	PRIVATE SECTOR
MARKET ANALYSIS	6 mos	6 mos
ENVIRONMENT ASSESMENT/SITE INVESTIGATION	6-9 mos	6-9 mos
APPROVAL BY SERVICE SECRETARY	6 mos	N/A
BUDGET SUBMISSION	1 year	N/A
CONGRESSIONAL AUTHORIZATION/FINANCING	2 years	6 mos
BID ACCEPTANCE	6 mos	N/A
DESIGN	1-3 yrs	1 year
START CONSTRUCTION	ASAP	ASAP
COMPLETION AND ACCEPTANCE	1 year	1 year
TOTAL	7-10 yr	1 year

Government regulations also come in the form of strict specifications such as square footage, number of bedrooms and quality of components such as air conditioners and playgrounds. The differences between what a private firm would do for a private unit and what they are required to do for the government adds 12% to the cost of DoD housing. [Ref. 3:p.22]

The cost of labor is also between 5 to 15% more expensive when private contractors construct DoD units than when building private sector units. DoD construction is governed by the Davis-Bacon Act which requires that labor be paid at "prevailing wages." [Ref. 3:p.21] Prevailing wages have developed to mean the going wage rate of the local union which may or may not be the lowest local wage rate.

Government housing is also more expensive to operate and maintain than private sector housing. "The Institute of Real Estate

Management notes that average operating expenses for rental units in the private sector account for approximately 40 percent of gross rent."

[Ref. 3:p.22] A typical private sector unit rented by a military family would have annual operating costs under \$4,000 a year. However, the operating cost for a DoD unit in the same area would average \$6,200 a year. The major reason for the cost differential is that occupants of DoD housing have no incentive to conserve utility usage since they do not pay for these services. Utility costs make up about 30% of DoD's operations and maintenance costs for MFH. "According to some estimates, the cost of utilities for rental units in the private sector drops 20% when people become responsible for their own utility costs."

[Ref. 3:p.23]

3. Housing Is Not Built in High Cost Areas

Construction for MFH is authorized by Congress only after a shortage of housing exists. However, building in an area where there is scarce housing means that the cost of building these units will be at a premium.

Housing availability in communities is cyclic and when housing is in short supply, military installations also experience shortages. In order to program new construction, a housing shortage must exist for the entire new construction procurement cycle. During housing shortage periods, all housing is at a cost peak. If local costs decline, the military shortage eases ... DoD has no authority to obtain units when the need - and cost - is less severe. In short, the Government "buys high, sells low."

[Ref. 12:p.3]

It is also questionable whether DoD is even adhering to its policy of building MFH in high-cost or isolated areas. According to the CBO "most DoD family housing units are not located in high-cost or isolated areas where it might be difficult to obtain housing in the private sector." [Ref. 3:p.xi] In fact, over 50% of DoD's MFH units

are in areas in which the cost of private sector housing is below the national median average of \$541 per month. Also, more than 53% of the units are in areas where MFH accounts for less than 2% of the local housing and only 20% are in areas where it accounts for more than 5%. If the majority of MFH was located in high cost or isolated areas you would expect MFH to make up a much more significant percentage of that area's housing. [Ref. 3:p.14]

4. Age of Units

Further complicating the housing issue is the fact that the Navy's existing inventory of units is rapidly reaching the end of its useful service life. Most of these units were built in the 1950's and 1960's under the Wherry and Capehart construction programs. According to the Department of Defense:

The inventory of government-owned housing units is aging. On average one-third of the units are over 30 years old, one-third over 20 years old, and the remaining third under 20. This aging infrastructure is driving ever-increasing operations and maintenance expenses and the need to fund high levels of renovation and improvements to maintain the units in adequate condition. [Ref. 4:p.3]

"Replacing or revitalizing a housing unit can be expensive. The median cost of a new DoD unit in the United States is about \$100,000. The typical cost of whole-house revitalization -- an investment that extends the service life of an existing unit by approximately 20 to 25 years -- is \$60,000." [Ref. 3:p.24] CBO estimates that it will cost approximately \$880 million per year to replace or revitalize MFH. However, because DoD is not meeting this \$880 million per year figure, CBO estimates that the backlog of required construction equals roughly \$11 billion. If the DoD does not phase in construction for MFH they will have to extend the service life of very old buildings, undertake a

massive building program after the turn of the century, or phase out MFH and force servicemembers to rely more on the private sector for housing.

5. Allowances and Incentives

Critics of the Variable Housing Allowance, such as the Rand Corporation, point out that it is based not on the price of local housing but on the expenditures of military personnel in that area [Ref. 14:p.14]. As a result, those living in a high cost area are not compensated as much as those in low cost areas. This results because personnel living in high cost areas reduce their housing consumption because of the higher prices. This reduces the overall expenditures for the area which in turn reduces the area's VHA. It has been recommended that DoD shift the setting of VHA rates from local expenditures to prices. DoD recognizes these problems and concluded in a recent review that "the housing allowance has come to present the Department of Defense with one of its greatest, most persistent compensation challenges." [Ref. 15:p.7]

6. Waiting Lists

Another persistent MFH problem is long waiting lists for government quarters. In September 1992, 92,351 enlisted personnel and 15,648 officers were on waiting lists for DoD family housing [Ref. 9:p.60]. Some of these waiting lists are often over 9 to 30 months long [Ref. 4:p.7]. When a servicemember arrives at a duty station and no housing is available he or she is placed on a waiting list until government quarters becomes available. While waiting, a person receives a Basic Allowance for Quarters (BAQ) and a Variable Housing Allowance (VHA) to obtain housing in the private sector. A person may move into

military housing from the private sector up to six months before being transferred.

"Because housing allowances are, in effect, the price military families pay for DoD housing, low allowance levels spur a demand for more DoD housing, which results in long waiting lists in some areas." [Ref. 3:p.1] The existence of a waiting list for DoD housing indicates that those waiting value MFH more than the housing they could obtain in the private sector for the same housing allowance. However, it is virtually impossible for DoD to determine how much more they value MFH. The only way to truly determine what the fair market value is for each DoD unit is to determine how much rent a family would be willing to pay.

7. Constant Change of Occupants

Another problem with the current system is the high cost associated with the constant change of occupants. Throughout DoD, nearly 40% of the units change occupants annually. Each change incurs maintenance costs between \$250 to \$1000 to get each unit ready for the next occupant. In addition, when a member moves "from out in town" to on-base, the military incurs an additional moving cost averaging \$500. The DoD said in DMRD 966; "Given the goal of providing adequate housing for all military personnel, combined with the fact that over 72% of all military families always live off base, it appears to be an unnecessary expense and turbulence to move members, housed in adequate quarters in the private sector, into government housing." [Ref. 4:p.7]

The military currently spends about \$3 billion annually on all types of moves [Ref. 9:p.42]. By reducing the number of moves, the military saves not only money but also the stress on military life associated with moving, changing schools, time away from work, etc.

Off-base to on-base moves alone occur about 50,000 times annually at a cost of \$46 million [Ref. 4:p.7].

F. DOD'S PLANS FOR MILITARY FAMILY HOUSING

The DoD places a high priority on continuing its current MFH program. For at least the next decade, the DoD plans on maintaining its existing units. Base closures will result in a 4% inventory reduction bringing the total down to 298,000 units. However, because the military is in the process of reducing troop levels, the percentage of families that will be provided military family housing is expected to increase from 33% to 38% by 1999.

The cost of the current DoD plan is very expensive. The CBO estimates that between 1994 and 1999 the DoD will have to spend an average of \$880 million annually to revitalize or replace its current inventory. Unfortunately, the DoD is not keeping up with this target. According to the CBO, Congress appropriated only \$480 million in 1993 for new construction (continental U.S. only) and the Clinton Administration requested only \$500 million for 1994. [Ref. 3:p.xiii]

G. PAST RECOMMENDATIONS FOR MILITARY FAMILY HOUSING

The Secretary of Defense (SECDEF) has investigated the housing issue many times through the Defense Management Report (DMR) process. The DMR was designed to investigate ways in which DoD agencies could streamline their organizations and operations to save both money and manpower. When a review of an initiative is completed a Defense Management Report Decision (DMRD) is prepared and sent to the heads of the service agencies for comment. After service agency comments are

received, the DMRD is forwarded to the SECDEF for a ruling on whether the initiative will be accepted or rejected.

1. DMRD 910: Privatization of Military Family Housing

In October 1989, DoD considered DMRD 910 which proposed transfer of MFH to the private sector. It's goal was to provide better distribution of housing allowances by families and provide more efficient and cost effective maintenance of units. It offered three alternatives:

1. Give all families cash allowances for housing and charge market rents to yield savings of \$506 million in FY 1991.
2. Contract out the operations and maintenance and save \$60 million in reducing civilian end strength by 2,546 in FY 1991.
3. Sell or lease DoD housing resulting in revenues of \$3,200 million and reduce civilian end strength by 2,037 in FY 1991.

Under the first alternative, DoD retained ownership of the housing units and charged rent based on market rates. DoD estimated that at market rates the housing would rent for at least 21% more than current housing allowances. With VHA and BAQ rates unchanged, residents would pay the extra 21%. Uncertainty existed over whether members would be willing to pay a higher rent for government housing than for similar housing in the private sector. However, DMRD 910 contended that military members believed that the security of MFH was worth the additional cost.

The Secretary of the Navy did not agree with DMRD 910. He believed that the alternatives reversed 200 years of traditional benefits by breaking faith with the military member, and would produce

"a severe and immediate decline in the quality of life and morale of personnel residing with their families in government housing."

[Ref. 4:p.1] DMRD 910 was not approved.

2. DMRD 966: Operating MFH as a Business Enterprise

The next DMRD that addressed military family housing was DMRD 966 in 1990. DMRD 966 proposed the operation of MFH as a business enterprise. It maintained that the forfeited BAQ and VHA from members residing in base housing should be used as the baseline for funding. Servicemembers occupying government quarters would be charged monthly rent equal to the amount they currently forfeit. The rental income would be used to establish a local revolving account for the operations, maintenance, renovations, management and replacement of the housing assets. All work performed within the MFH community would be funded by this account. Once the fund was established, all MFH projects would be prioritized and funded in terms of the benefit to its MFH occupants. This plan was sold as a viable option because:

The private sector charges in excess of their costs to make a profit; there are overhead business expenses in the private sector that the government does not have such as advertising; the private sector has to pay local and federal taxes; the private sector incurs costs for insurance; and the private sector must purchase the land for their projects. [Ref. 4:p.13]

Ways in which the DMRD 966 proposal would allow housing units to be operated in a business-like manner are:

1. Housing managers would obtain control of their staffing, purchasing and increased contracting authority. Managers could make all of their own decisions such as lay-offs, new construction, etc.

2. Each servicemember would be free to use his or her entire housing allowance on either government housing or private sector housing.

3. With the exception of military construction funds, which would be treated as capital investment items, all funding for family housing operations, maintenance, and improvements would be strictly based on allowances collected from servicemembers.

DMRD 966 was not approved. It was the opinion of the Under Secretary of the Navy that:

The proposal to run family housing, like a business, with a dependence on housing allowances as its source of income ignores reality. Allowances do not reflect the cost of building, operating, and fixing family housing. In fact, BAQ and VHA funding levels are inadequate to support the operation, maintenance, repair, improvement, and capitalization of investment expenses that we already must pay. Also, the base commander does not have the ability to set prices for housing as does the private landlord. In summary, we will force fit the way we take care of family housing in order to live within the arbitrary income levels. [Ref. 16]

3. DMRD 971: The Defense Business Operations Fund

Although DMRD 966 was not approved, some of its goals were realized in DMRD 971 which developed the Defense Business Operations Fund (DBOF) concept. The following is a brief description of DMRD 971:

The primary goal of implementing the DBOF is to provide a business management structure that encourages managers and employees of Department of Defense support organizations to provide their products or services at the lowest cost. The DBOF essentially combines existing commercial or business operations that were previously managed as individual revolving funds into a single revolving or business management fund... DMRD 971 introduced the theory of applying business-like practices to Department of Defense financial management. The goals of DMRD 971, as outlined by the Office of the Secretary of Defense, are based on creating a business environment in DoD operations. As with all businesses, it is essential that operations put a premium on quality and encourage managers at all levels to reduce costs. [Ref. 17:p.6-5]

As a result of DMRD 971 and DBOF, "DoD comptrollers can investigate, if not require, that MFH be operated on a self sustaining basis." [Ref. 7:p.20] The concept of using a revolving fund is a key element of this thesis. As will be discussed in Chapter V, this thesis uses a revolving fund to implement a rental system within a military family housing program.

H. SUMMARY

This chapter has briefly described the current military family housing program. Although the program has been successful in providing housing to approximately one-third of the military's families, the program is not without problems. The Department of Defense has investigated these problems through its Defense Management Report program, but to date has made few significant changes. This thesis explores the implementation of a rental system in the military family housing program as outlined by the DoD in DMRD 966 and the CBO in its 1993 study. Chapter IV gives a brief overview of the CBO study.

IV. INSTITUTING A RENTAL MARKET IN MILITARY FAMILY HOUSING

A. CONGRESSIONAL BUDGET OFFICE PLAN

Although there have been many different recommendations and reports made to improve the current housing system, this thesis uses the proposals contained in DMRD 966 and the Congressional Budget Office report as the baseline for a DoD MFH rental system. The following is a summary of the CBO recommendation:

(DoD should) set rents and operate its housing in a manner similar to that of a private sector provider. Rents for each type of unit at each installation would be set to eliminate both persistent waiting lists and vacancies. DoD would continue to operate its existing units as long as the rent they could command covered at least the cost of their continued operation. However, DoD would revitalize or replace an aging unit only if the rents it anticipated covered the total cost of the unit to the federal government (including amortized capital costs). Because of the relatively high cost of DoD housing compared with housing in the private sector, this policy would probably lead to a large, albeit gradual, reduction in the stock of DoD family housing.

Moreover, despite the larger allowances the federal government would pay, the option would save money because DoD would operate its existing housing stock more efficiently and gradually reduce its housing inventory in the locations in which the value of DoD housing to servicemembers was less than the cost of providing the housing. The amount of savings would depend on the extent of the reduction in DoD inventories. If the rents DoD could charge justified its retaining 25% of its units over the long run, the annual savings between 1994 and 1999 would average approximately \$760 million.

In addition to producing savings ... using rental prices to signal the value of DoD units to military personnel, the department would have an automatic and credible process for determining its family housing requirements. The criterion for construction would be the value of the unit to servicemembers must at least equal the government's cost of providing the unit.
[Ref. 3:p.18]

B. CBO ESTIMATE OF THE COST MILITARY FAMILY HOUSING

The CBO has determined that it is possible for the federal government to achieve savings in its military family housing program by shifting to a rental policy. The CBO's estimates are based, however, upon its assumptions about the cost of DoD housing. Before discussing the CBO's savings estimates, its cost assumptions should be explained further.

The Congressional Budget Office believes that the cost of MFH is about 35% more than the private sector when the cost of land is excluded. Table 7 [Ref. 3:p.18] gives a detailed description of the CBO's assumptions.

TABLE 7: AVERAGE ANNUAL DOD COSTS COMPARED WITH PRIVATE SECTOR
(In 1993 dollars)

DoD Unit		Private sector Unit	
Operations & Maintenance	\$6,200	Housing Allowances	\$7,500
Amortized Cost Capital	\$4,400a	Out-of-Pocket Costs	\$1,700
School Impact Aid	\$1,900b	Total	\$9,200d
Cost of Land	\$500c		
Total excluding land	\$12,500		
Total including land	\$13,000		

SOURCE: CBO based on data from the DoD and the Department of Education.
NOTE: The figure compares the average costs of a DOD unit in the U.S. with what families now living in those units would choose to spend to obtain housing in the private sector. It assumes that such families would spend, on average, the same amount to obtain private sector housing as similar military families (that is, families in the same paygrade and location) who do live in private sector housing. It is not necessarily a comparison between units of equal value in the eyes of military families.

a. Construction costs were amortized over the service life of the unit using an interest rate of 3 percent. This estimate assumes that initial construction costs are \$100,000, that units are revitalized at a cost of \$60,000 after 35 years, and that units are retired 22 years after being revitalized.

b. The average Impact Aid paid by the Department of Education on behalf of the children of families living in DoD units less the average costs of the payment that would be made if those families lived in housing in the private sector.

- c. The cost of holding land. It assumes that land for a DoD unit is worth \$15,000, on average, and that the annual cost to the federal government of holding an asset is equal to 3% of its value.
- d. This total implicitly includes all of the costs applicable to housing in the private sector, including real estate taxes, the cost of maintenance and utilities, the cost of holding land, depreciation, and interest.

The cost of land in the CBO estimates would only be included in the total cost if it is believed that DoD would sell the land once the land was no longer going to be used for housing.

C. POTENTIAL TAXPAYER SAVINGS

Based upon the Congressional Budget Office's DoD MFH housing cost estimate, the CBO believes that savings can be obtained by implementing a rental system. The CBO's estimate is pessimistic in nature because it believes, in general, most housing complexes will not be able to compete with the private sector. It should be pointed out, however, that this is still consistent with the overall DoD strategy for military family housing. The Department's overall strategy is to rely on the private sector for housing the majority of its military families. The Congressional Budget Office recommendation to implement a rental system would likely reduce the DoD's involvement in the housing business, at least in terms of the number of units operated by DoD.

A shift to a rental system would achieve savings because the DoD's inventory would be slowly reduced. Those housing complexes where the value of on-base quarters to military families is less than the cost to the government will be forced to close. The amount of savings will depend upon how quickly these marginal housing complexes close. The CBO assumes that current units will continue to operate until they require a whole-house revitalization or replacement. It also assumes that the

rents that will be charged will justify replacing or repairing only 25% of the units as they reach the required age. According to the Congressional Budget Office:

This last assumption probably overstates the percentage of units that DoD would maintain in the long run and thus understates the savings from this option. The long-run average annual cost of a DoD unit to the federal government is \$12,500 -- about 35 percent more than servicemembers choose to pay for housing in the private sector. Even if DoD housing were considered quite desirable, few military families would be likely to feel that they could afford to pay a 35 percent premium to obtain it. [Ref. 3:p.49]

To understand why military families would be unlikely to spend the additional 35% it is first necessary to explain why the Congressional Budget Office believes most families seek MFH at all.

According to the Congressional Budget Office, the implicit price paid by military families living in government housing provides an artificial incentive not to live in the private sector and is therefore in contradiction to the DoD's current housing strategy.

The current DoD housing system provides what amounts to a price subsidy that hides the full cost of DoD housing from military families and encourages them to choose DoD housing over housing in the private sector. Over the long run, the rent paid by military families who live in private sector housing must cover all of the costs incurred by the landlord who provides that housing. For military families living in DoD housing, the situation is quite different. The housing allowances that those families forfeit are, in effect, the rent that they pay for DoD housing. But the \$7,500 in housing allowances that the average family living in DoD housing forfeits accounts for only 60 percent of the \$12,500 that the federal government spends to provide a DoD housing unit (Table 8). DoD housing is actually about 35 to 40 percent more costly than the private sector housing military families obtain, but it appears to be approximately 20 percent less costly in their eyes -- the 20 percent being the out-of-pocket costs they avoid. [Ref. 3:p.27]

Although the housing strategy of the Department of Defense is to house most of its military families in the private sector, its housing allowance policies actually encourage personnel to seek government

quarters. Therefore, the Congressional Budget Office seeks to return the Department of Defense to a strategy of relying on the private sector. By slowly reducing the Department of Defense's interest in the housing business, the CBO believes that not only will the housing complexes that remain be operated in a more efficient manner, but also, the DoD will realize substantial savings. Table 8 shows the CBO estimates for savings under the rental system.

TABLE 8: DoD AVERAGE ANNUAL SAVINGS UNDER A RENTAL SYSTEM
(In millions of 1993 dollars)

CATEGORY	1994-1999	2000-2014
Military Construction	640	620
Family Housing Operations & Maintenance	300	780
Housing Allowances Less Receipts (a)	-230	-960
School Impact Aid	50	200
TOTAL	760	640

SOURCE: Congressional Budget Office based on data from the Departments of Defense and Education.

NOTES: These figures represent undiscounted savings by the federal government relative to a fully funded DoD plan.

(a) The additional cost of allowances is less receipts from rents and utility charges. These estimates take into account the cost of raising allowance levels to hold constant the total out-of-pocket cost borne by military families for housing.

(The CBO estimate of savings under the rental system) takes into account the cost of providing housing allowances to all military families and the cost of raising the level of allowance payments so that the total out-of-pocket cost incurred by servicemembers is the same as it would be under the (current) DoD plan. Thus, the estimate of savings does not reflect dollars from the pockets of military personnel. In addition, the savings estimate is not affected by the amount of the rental payments DoD would receive because all rents in excess of the cost of paying allowances to those living in DoD housing would be returned to the entire force in the form of higher allowances levels. [Ref. 3:p.49]

According to the CBO:

If DoD's housing inventory decreased gradually--and permanently--to 25 percent of the level currently planned, the total of all savings from the rental option would be approximately \$16 billion. (This estimate is discounted to take account of the value of money over time.) Approximately \$1 billion of the discounted savings

would come from savings in utilities. Reducing the DoD inventory would account for the other \$15 billion. [Ref. 3:p.49]

Utilities savings under the rental system would materialize because both tenants and housing managers would have incentives to reduce costs. As previously discussed, the military spends much more on utilities than the private sector. Housing managers could reduce utilities consumption by about 20% as soon as they installed meters. "This is expected to save about \$300 per DoD unit each year (\$90 million annually at DoD's current level of inventory)." [Ref. 3:p.48]

D. DISADVANTAGES OF A SHIFT TO A RENTAL SYSTEM

One of the largest disadvantages of a DoD rental system is the large start-up cost that will be required. A system for collecting rents will have to be developed. Also, housing managers will incur the one-time cost associated with installing meters. Another disadvantage is the risk involved in setting initial rents. As previously discussed, the DoD currently has no way of determining the true value of its current housing inventory to its military tenants.

Initially, however, expert judgement would be needed to estimate those levels, taking into account the length of current waiting lists and the cost of comparable housing in the private sector. Some errors would be inevitable, and adjustments in rents would then be necessary if persistent waiting lists or vacancies developed. Fortunately, DoD housing is usually constructed and revitalized in blocks of between 100 and 300 similar units; DoD thus could set initial rents without evaluating each housing unit individually. [Ref. 3:p.50]

A rental system might also make it difficult to charge a suitable rent for historic quarters assigned to senior officers. The cost to maintain these old quarters is usually greater than the rents that could be collected from tenants. To prevent an exorbitant rate being charged

to those occupying historic quarters it would probably be necessary to supplement a housing complex for these units.

In general, however, the Congressional Budget Office believes that the advantages of rental system outweigh the disadvantages.

These disadvantages are important, but they must be weighed against the key benefit of a rental system. More than the other approaches in (the CBO) study, such a system would provide DoD with clear signals about the housing preferences to shape its decisions about family housing. On the one hand, those signals would permit DoD to provide family housing in locations in which the value of the units to servicemembers exceeded the costs to DoD. On the other hand, they would discourage DoD from providing housing in locations in which the cost of DoD housing exceeded the value of the units to military personnel. [Ref. 3:p.52]

Perhaps most importantly, however, a change to a rental system will bring the Department of Defense more in line with its own policy of relying primarily on the private sector to house its servicemembers.

V. FINDINGS AND ANALYSIS

A. INTRODUCTION

Accepting that there are inefficiencies in the current DoD military family housing program, this thesis examines the specific solution outlined by the Congressional Budget Office and DMRD 966. This chapter attempts to determine the effects of a DoD rental system on a typical housing program. Specifically, would a typical housing program, such as the Naval Postgraduate School housing complex, La Mesa Village, be able to maintain its ability to operate, rebuild it's inventory, and be likely to compete in the local housing market?

After providing a brief background of the Naval Postgraduate School and its housing program, this chapter will accomplish the five objectives as laid out in the methodology in Chapter I.

B. THE NAVAL POSTGRADUATE SCHOOL HOUSING PROGRAM

The Naval Postgraduate School (NPS) is located in Monterey, California. It's primary function is to provide postgraduate education to over 1,750 students from the Navy and other services as well as personnel from the Department of Defense and several foreign countries.

1. History of NPS Housing

In 1945, the Naval Postgraduate School moved from the Naval Academy in Annapolis, Maryland to the old Del Monte Hotel in Monterey, California. The hotel and the surrounding 627 acres were purchased from

the Del Monte Properties Company for \$2.13 million. The current campus consists of 615 acres at five different sites. [Ref. 18:p.3]

While stationed at NPS, personnel may choose to live either in family housing at La Mesa Village or seek private housing in Monterey. Currently over one-half of all of the officers assigned to NPS utilize La Mesa family housing. La Mesa Village is located one-half mile from the NPS campus on Navy owned land. Officer housing at La Mesa village consists of 877 family units. There are an additional 14 officer homes on the NPS campus that house one civilian and 13 senior officer families. This includes the admiral's quarters which were built in 1926. La Mesa Village offers a convenience store, beauty salon, six tennis courts, little league fields, an elementary school and numerous playgrounds. [Ref. 18:p.6]

2. Types of Housing at NPS

The housing offers 34 different floor plans from two bedroom quadraplexes to single homes with fireplaces. Development of the housing complex began in 1952 with the construction of the first Wherry Housing units. Wherry Housing is the oldest and largest of the current housing. A total of 449 units were built ranging in size from 811 to 1,622 square feet. It offers both Field Grade (04-05) and Junior Grade (01-03) quarters of both one and two stories. The units have between two and four bedrooms. None of the units have garages, but 117 have carports.

The next construction in La Mesa Village was Capehart Housing built in 1962. A total of 150 Field Grade Quarters were built ranging from 932 to 1,393 square feet. Each unit has between two to four bedrooms and one to two baths. All Capeharts have attached carports.

In 1965, 160 Funded Townhouses were built for Junior Grade Quarters. The townhouses have three to eight units per building with most being two-story. All units within the townhouses have three bedrooms, but none have fireplaces or carports. The units range from 1,171 to 1,228 square feet.

The final units to be built in La Mesa were the Funded Townhouses in 1969. The housing consisted of two bedroom Junior Grade units and three and four bedroom Field Grade units. Each building has between four to eight units and all are two story complexes. The units range from 1,031 square feet with two bedrooms and 1 and 1/2 baths to 1,406 square feet with four bedrooms and 2 1/2 baths. None of the townhouses have carports or fireplaces. [Ref. 18:p.4] From Table 9 it can be seen that all of the units at NPS are over 25 years old and that over 50% are over 40 years old.

TABLE 9: NAVAL POSTGRADUATE SCHOOL HOUSING INVENTORY

TYPE	YEAR	# OF UNITS	PERCENTAGE
Admiral's Quarters	1926	1	<1
NPS Senior Officer	1928	13	1
Wherry Apartments	1952	449	50
Capehart Apartments	1962	150	17
Townhouses	1965	160	18
Townhouses	1969	118	13
TOTAL		891	100

Enlisted personnel assigned duty at the Naval Postgraduate School are currently offered family quarters at Fort Ord. When the housing units in La Mesa were originally constructed, twenty units were built to house enlisted personnel. Today, these "enlisted" quarters are assigned to officer students.

3. Housing Assignment

Officer housing is assigned based upon a person's rank and number of dependents. Higher ranking individuals and those with a larger number of children receive units with more square footage as well as more bedrooms. Upon arrival at NPS each officer is offered two different units to choose from based upon the following criteria:

TABLE 10: SIZE OF HOUSING ISSUED

FAMILY SIZE (NUMBER OF CHILDREN)	BEDROOMS
No Children	2
1 Child	2
2 Children	2
2 children (with one over 10 years old)	3
3 Children	3
3 children (with two over 10 years old)	4
3 children (one over 10, one of other two of opposite sex and one over 6)	4
4 or more children	4

The number of bedrooms a servicemember is entitled to is based on the following rationale:

1. No child should have to share a bedroom with the parent(s).
2. No more than two children should have to share any bedroom.
3. A child 6 years of age or over should not have to share a bedroom with a child of the opposite sex.
4. A dependent 10 years of age or over is entitled to a separate bedroom.

Each paygrade also has a minimum and maximum square footage requirement. Tables 11 and 12 [Ref. 6:p.33] show the unit sizes for each paygrade.

TABLE 11: CURRENT MINIMUM NET FLOOR AREA

NUMBER OF BEDROOMS	ENLISTED	01-03	04 AND UP
ONE BEDROOM	550	700	---
TWO BEDROOMS	750	865	950
THREE BEDROOMS	960	1,035	1,120
FOUR OR MORE	1,190	1,185	1,225

TABLE 12:CURRENT MAXIMUM NET FLOOR AREA

	E1-E6	E7-03	04-05	06	07 AND UP
TWO BEDROOMS	950	950	---	---	---
THREE BEDROOMS	1,200	1,350	1,400	---	---
FOUR BEDROOMS	1,350	1,450	1,550	1,700	2,100
FIVE BEDROOMS	1,550	1,550	---	---	---

The program at the Naval Postgraduate School was originally designed to provide five different types of quarters. Flag officer (07) and senior officer (06) quarters are located on the NPS campus. Field grade (04-05), junior officer (01-03), and enlisted quarters are at La Mesa. As originally built, each of these categories vary in quality and size so as to reflect the increasing privileges associated with increasing rank.

The units at La Mesa were primarily built to house Lieutenant (03) and Lieutenant Commander (04) students. Therefore, as the following table shows, most of the units are in this range. The 20 quarters originally built to house enlisted personnel are usually filled by Lieutenants (03) and are therefore considered part of the (01-03) category throughout the rest of this study. Table 13 [Ref. 19] shows the number of units by category and number of bedrooms.

TABLE 13:HOUSING UTILIZATION AND OCCUPANCY REPORT
HOUSING CATEGORIES

NUMBER OF BEDROOMS	07	06	04-05	01-03	ENL.	TOTAL
1 BEDROOM	-	-	-	-	-	0
2 BEDROOMS	-	-	52	18	2	72
3 BEDROOMS	-	7	200	466	14	687
4 BEDROOMS	-	6	78	43	4	131
5 BEDROOMS	1	-	-	-	-	1
TOTAL	1	13	330	527	20	891

4. Occupancy Rates

According to the housing staff, occupancy rates were consistently above 90% during the past five years. Rates were lower in 1994 because of students being offered quarters at Fort Ord. Therefore,

the 1993 occupancy percentages were used as representative figures throughout this study. The following table shows the occupancy of La Mesa's units from 1993 by category and rank. It should be noted, however, that La Mesa has routinely had a waiting list for its housing. Simultaneously having a waiting list and having vacant units is not inconsistent because units often remain vacant for required maintenance during a change of occupancy.

TABLE 14: CURRENT OCCUPANCY BY CATEGORY AND RANK
HOUSING CATEGORIES

RANK	07	06	04-05	01-03	TOTAL
07 ABOVE	1	1 civ	0	0	2
06	0	10	0	0	11
04-05	0	1	189	15	205
01-03	0	0	117	479	596
TOTAL	1	12	307	494	814
OCCUPANCY	100%	92%	93%	90%	91%

5. Services Offered to Tenants

Every tenant at La Mesa Village receives many services free of charge. Most are contracted out by the housing management to private firms in the Monterey area. For example, local firms are paid for trash collection, gas, electricity, water and entomological services (pest control). La Mesa management is also able to utilize government employees for performing various types of construction and maintenance. Work performed by government employees is reimbursed by paying the command supplying the labor. For example, the Naval Postgraduate School provides fire and police protection to La Mesa Village and, in return, the housing management pays a portion of their salaries. Some of the reimbursable labor is performed by military personnel stationed at NPS (station forces). For example, the local Civil Engineering Corps is

involved in several building projects each year. The Naval Facilities Engineering Command is involved in all major construction.

La Mesa is responsible for all repairs to individual units and makes periodic improvements. In 1994, for example, bath fans were installed in 150 Capehart units and vanity cabinets were installed in 278 Townhouses. Typical repairs in 1994 were to main water valves, dry rot and roofing problems. The housing management is also responsible for repair and replacement of all installed kitchen appliances such as refrigerators and dishwashers. A self-help center is provided free of charge to occupants so that they may do their own repairs, gardening and maintenance.

6. Housing Office Management

The La Mesa Village housing office has a staff of eight full-time government employees. They are responsible for the day to day operations of the housing complex such as budgeting, scheduling maintenance, and assigning and inspecting quarters. The staff is headed up by a GS12 housing manager and GS09 assistant manager. A GS09 budget analyst is responsible to the housing manager. Also working in the housing office is one GS11 housing management specialists, three housing management assistants (2 GS07/1 GS05), a GS05 housing assignment clerk and a GS05 data processing clerk.

7. Construction Plans

One major construction event is officially scheduled before the end of the century. Beginning in 1994, the Navy will revitalize 165 Wherry units over two years. The first 102 Wherry family units have been contracted at a cost of \$3,846,449. Appendix A [Ref. 20] lists the specific repairs to be conducted. The revitalization project is

. expected to add an additional 25 years of service to each unit renovated. Unofficially, the La Mesa management expects to revitalize the 13 senior officer quarters beginning in the year 2000.

C. FIRST OBJECTIVE: DETERMINE LA MESA'S COSTS

1. FY 1994 La Mesa Budget

In order to determine if Naval Postgraduate School housing could be operated and maintained at its current level, it is first necessary to determine the current costs of operation. The following table lists the direct and indirect costs associated with running the housing at NPS. Costs are listed by Budget Project (BP) number and title. A complete listing of La Mesa's fiscal year 1994 budget is contained in Appendix B.

TABLE 15: FISCAL YEAR 1994 BUDGET

BP & TITLE	TOTAL
10 SERVICES	575,900
11 MANAGEMENT	397,400
12 UTILITIES	1,745,200
14 FURNISHINGS	476,800
20 MAINTENANCE	1,764,098
TOTAL	\$4,959,398

Most of the costs listed in Appendix B are self-explanatory. It should be noted, however, that the costs in the appendix are La Mesa's original 1994 request for funds. The budget figures in Table 15 have been increased slightly over those listed in Appendix B, largely because of the addition of a new program called Neighborhood Excellence. Although the NPS officially has 891 units, the admiral's quarters are separately funded and therefore excluded from much of the analysis in this thesis.

2. La Mesa's Operating Costs Under a Rental System

For the purposes of this thesis, the only operating cost that is assumed to vary, as a function of occupancy rate, is utilities. The cost of services, management, furnishings and maintenance is assumed to remain constant regardless of the number of units occupied. Although a small amount of utility costs associated with operating such things as the housing office will also remain fixed, tenant utility usage can be expected to vary from family to family.

Assuming that the La Mesa housing management installs meters, it can reduce consumption by making individuals responsible for their usage. According to the Congressional Budget Office, "the cost of utilities for rental units in the private sector drops 20% when people become responsible for their own utility costs." [Ref. 3:p.22] Therefore, discounting the utility consumption portion of La Mesa's budget by 20% results in the reduced utility consumption figures in Table 16, based upon La Mesa's budget listed in Appendix B.

TABLE 16: LA MESA'S EXPECTED UTILITY COSTS UNDER A RENTAL SYSTEM

TYPE OF UTILITY	CONSUMPTION	RATE	TOTAL
B1A Electricity			
La Mesa (877)	4,561,234 MWH	\$0.0960 per MWH	\$437,878
NPS (13)	292,547 MWH	\$0.0828 per MWH	\$24,223
B1B Gas	703,160 MBTU	\$0.8151 per MBTU	\$573,146
B1D Water	71,570 KGAL	\$3.74 per KGAL	\$267,672
B1E Sewage	24,298 KGAL	\$2.65 per KGAL	\$64,390
TOTAL			\$1,376,319

Dividing the total utility cost (\$1,376,319) by 814 units provides an estimated average annual per unit cost of \$1,691. Table 17 shows the estimated annual fixed and variable costs required to operate La Mesa Village.

TABLE 17: LA MESA'S ESTIMATED OPERATING COSTS UNDER A RENTAL SYSTEM

BP & DESCRIPTION	FIXED COSTS	VARIABLE COSTS
10 SERVICES	\$575,900	
11 MANAGEMENT	\$397,400	
12 UTILITIES	\$19,841	\$1,691 PER UNIT
14 FURNISHINGS	\$476,800	
20 MAINTENANCE	\$1,764,098	
TOTAL OPERATING COSTS	\$3,234,039	\$1,691 PER UNIT

3. La Mesa's Estimated Revitalization Costs

This thesis assumes that the housing management is planning a perpetual reconstruction program based upon its current inventory of 890 units. In order to afford the cost of construction and revitalization, it is assumed that the revenues received through rents will be placed into a revolving fund similar to the DoD Defense Business Operations Fund (DBOF). According to the Congressional Budget Office the cost of capital for DoD housing units can be estimated based upon the following assumptions:

An average DoD unit is constructed at an initial cost of \$100,000; it is revitalized when it reaches 35 years of age at an additional cost of \$60,000; and it is retired, on average, 22.5 years later. (These assumptions are used throughout this study and are consistent with estimates provided by DoD). Using a real discount rate of 3 percent, the present discounted value of these life-cycle capital costs is \$120,000. The amortized cost of capital for DoD units -- approximately \$4,400 -- is that present discounted value amortized, or spread out (using the 3 percent annual interest rate), over the entire 57.5 - year life of the unit... CBO analyses typically assume discount rates ranging from zero percent to 4 percent, with 2 percent used as a midpoint estimate. DoD, however, applies somewhat higher rates. In accordance with the guidance in the Office of Management and Budget's Circular A-94, those rates range from 2.7% for projects with short service lives to 3.8% for projects (such as the construction of housing) that have service lives of 30 years or more. [Ref. 3:p.64]

This thesis uses the Congressional Budget Office figures for revitalization instead of using La Mesa's actual revitalization costs for several reasons. One reason is that the revitalization of 165 Wherry units is a contract price. It is possible that the repairs to

the units could exceed this price before the completion of the project. Another reason is that the \$4,400 cost of capital and the \$60,000 per unit revitalization cost are DoD wide estimates that take into account the average repairs to all units and can be used to simulate the construction and repairs of all units for the entire life of a housing complex.

4. La Mesa's Estimated Total Costs Under a Rental System

Using the CBO estimate of an annual cost of capital of \$4,400 per unit and the actual costs of operation, Table 18 lists the total costs required to run La Mesa. It is assumed that \$4,400 per unit will be charged regardless of whether a unit is occupied. The new figure - cost of capital - added to this table is simply the per unit annual cost of \$4,400 times the number of units (890).

TABLE 18: LA MESA'S ESTIMATED TOTAL COSTS UNDER A RENTAL SYSTEM

BP & DESCRIPTION	FIXED COSTS	VARIABLE COSTS
10 SERVICES	\$575,900	
11 MANAGEMENT	\$397,400	
12 UTILITIES	\$19,841	\$1,691 PER UNIT
14 FURNISHINGS	\$476,800	
20 MAINTENANCE	\$1,764,098	
COST OF CAPITAL	\$3,916,000	
TOTAL COST	\$8,192,200	\$1,691 PER UNIT

D. SECOND OBJECTIVE: ESTIMATE LA MESA'S REVENUES

This study assumes that if DoD implements a rental system within its Military Family Housing program that rental rates will be set, at a minimum, to ensure revenues exceed both its operating costs and the cost to re-capitalize the housing program's assets. Like the private sector, each housing complex will be required to operate from these revenues. After setting an initial rent it should be possible to calculate La

Mesa's net income in order to determine whether La Mesa could sustain its MFH operation.

1. Rent Concepts

As has been previously mentioned, the riskiest aspect of the shift to a rental program would be setting the initial rental rates. According to the Congressional Budget Office, the DoD should "set rental prices and operate its housing in a manner similar to the operations of a private sector provider. Rents for each type of unit at each installation would be set at levels that would eliminate waiting lists and limit vacancies to only very brief periods." [Ref. 3:p.48]

The CBO is not specific on how to set this rent but does refer to the "implicit" rent paid by military families. As mentioned in Chapter IV, the housing allowances that military families forfeit by moving into government quarters is the "rent that they pay for DoD housing." Although the CBO does not say how to set this rent, it acknowledges that adjustments would be required if waiting lists or vacancies occurred.

The Rand Corporation has also studied the housing issue and discussed how to place a value on military family housing.

The Rand Corporation observed:

Although DoD can fairly easily observe differences in expenditures, it cannot observe differences in the price of housing directly ... All methods of estimating price levels essentially use observable expenditure data to infer price levels... First, we should use expenditures for housing *services*, not housing *assets*, as the starting point. That is, we must convert observable data on expenditures. [Ref. 15:p.19]

The Rand Corporation's statements lend credibility to the idea of valuing a unit based on its "imputed rent" which is the current housing expenditure of military tenants. Lacking a better method to determine

the true value of MFH units to military tenants, this thesis uses this implicit value for its analysis.

This value will not be a perfect match because, as the Congressional Budget Office points out, the implicit price paid by military families living in government housing provides an artificial incentive not to live in the private sector. "DoD housing is actually about 35 to 40 percent more costly than the private sector housing military families obtain, but it appears to be approximately 20 percent less costly in their eyes -- the 20 percent being the out-of-pocket costs they avoid." [Ref. 3:p.27]

In many cases, the actual market value of a DoD unit may be higher or lower than a person's combined BAQ and VHA.

DoD housing managers sometimes argue that DoD must revitalize its stock of housing to keep it comparable to the housing obtained by military families in the private sector. Thus, the current widespread backlog in revitalization could be an indication that the quality of DoD units does not -- in general -- match the physical quality of units in the private sector and that DoD units would rent for less. On the other hand, military families who value the way of life made possible by on-base housing might place a higher value on DoD housing than they would on physically comparable housing in the private sector. In that case, DoD housing might rent for more than housing in the private sector. [Ref. 3:p.21]

2. Rent Used in Thesis Analysis

For the purposes of this thesis, rental rates will be set to match the value each tenant currently places on his or her unit. The current DoD housing allowance is designed to reimburse an individual for 85% of his or her housing expenditures. The remaining 15% is expected to be paid by the individual. By moving into government quarters, servicemembers avoid the "out-of-pocket" costs that their counterparts

in the private sector pay. Therefore, the price paid is actually only 85% of its actual value.

As was pointed out in Chapter III, because housing costs have been rising faster than the adjustments to BAQ and VHA, experts now believe that the BAQ and VHA only cover about 80% of an individual's housing expenditures. Therefore, in order to determine this "value" of La Mesa's housing units it is possible to use the following equation:

$$VHA + BAQ = 0.80 \times (\text{VALUE OF THE UNIT})$$

Written another way, this equation reads:

$$\frac{1}{0.80} \times (VHA + BAQ) = \text{VALUE OF THE UNIT} = 1.25 \times (BAQ + VHA)$$

Setting an initial rent equal to this value makes it possible to estimate La Mesa's annual revenue. However, to military tenants this value includes utilities. The CBO points out that under a rental system housing managers will install utility meters and charge their tenants in order to control energy consumption. DoD tenants currently do not pay for this usage, and it is a reasonable assumption that charging tenants for something they currently receive for free would be viewed as an erosion of the value of their housing.

Therefore, it would be prudent for a housing manager to discount a person's rent by an amount equal to their utility consumption. This thesis discounts a person's rent by 15% because La Mesa's current cost of utilities (\$1,745,200) is 15% of the total possible revenues (\$12,077,892) that could be collected if rent was set equal to a unit's value as shown in Table 19.

Table 19 estimates La Mesa's revenue, before discounting for utilities, by using its current housing inventory at a 91% occupancy

rate. The rates for BAQ and VHA can be found in Appendixes C and D.

All figures are rounded to the nearest whole dollar.

TABLE 19:REVENUE BEFORE DISCOUNTING FOR UTILITIES

UNIT TYPE	# OF UNITS	RANK	BAQ	VHA	VALUE OF UNIT	YEARLY TOTAL
06	1	civ	899	383	1,603	19,236
	10	06	810	449	1,573	188,760
	1	05	780	478	1,573	18,876
04-05	1	06	810	449	1,573	18,876
	189	04	688	449	1,421	3,222,828
	117	03	569	366	1,168	1,639,872
01-03	15	04	688	449	1,421	255,780
	479	03	569	366	1,168	6,713,664
TOTAL	813					12,077,892

Discounting the value of La Mesa's inventory by 15% yields the following rental equation:

$$\text{RENTAL RATE} = 0.85 \times \text{VALUE OF THE UNIT}$$

This equation makes it possible to set initial rental rates and estimate La Mesa's annual revenue. Table 20 shows the revised rental rates and yearly revenue derived from these assumptions:

TABLE 20:RENTAL REVENUE AFTER DISCOUNTING FOR UTILITIES

UNIT TYPE	# OF UNITS	RANK	BAQ	VHA	VALUE OF UNIT	RENTAL RATE	YEARLY TOTAL
06	1	civ	899	383	1,603	1,363	16,356
	10	06	810	449	1,573	1,337	160,440
	1	05	780	478	1,573	1,337	16,044
04-05	1	06	810	449	1,573	1,337	16,044
	189	04	688	449	1,421	1,208	2,739,744
	117	03	569	366	1,168	993	1,394,172
01-03	15	04	688	449	1,421	1,208	217,440
	479	03	569	366	1,168	993	5,707,764
TOTAL	813						\$10,268,004

From Table 20 the expected average annual rental revenue from a rental program when 91% of it's units are occupied would yield \$10,268,004. It should be pointed out, however, that for the purposes of calculating net incomes in the next Objective, added to this revenue will be the revenue collected from tenants for their utility usage.

Under a rental system a housing manager will install meters and have the ability to directly charge tenants.

Table 21 [Ref. 21:p.1] is provided to show that the rental rate estimates in Table 20 are roughly equal to the value of housing in the local private sector.

TABLE 21: AVERAGE RENTAL RATES IN THE MONTEREY AREA

LOCATION	ONE BEDROOM	TWO BEDROOMS	THREE BEDROOMS	FOUR BEDROOMS
SEASIDE	\$507	\$674	\$928	\$1,068
MARINA	\$558	\$682	\$938	\$1,097
MONTEREY	\$599	\$815	\$1,209	\$1,390
PACIFIC GROVE	\$621	\$816	\$1,192	\$1,315
CARMEL	\$845	\$1,253	\$1,389	\$2,010
SALINAS	\$485	\$621	\$851	\$1,082

The Department of Defense defines a housing market as the area within 30 miles and one hour commuting time. For the Naval Postgraduate School this includes an area as far north as Santa Cruz and as far south as Big Sur. According to the study, 75% of NPS students live on the Monterey Peninsula proper, including the communities of Monterey, Pacific Grove, Pebble Beach, and Carmel. Of those that live in this area, 98% of them live no further away than Marina or Salinas.

[Ref. 21:p.1]

As Table 14 revealed, the majority of tenants living at La Mesa are Lieutenants (O3). By comparing an O3's rental rate at La Mesa with Table 21 it can be seen that an O3 could rent a two bedroom unit anywhere in the area except Carmel or rent a three bedroom unit in Seaside, Marina and Salinas. Based on this information, it appears that the rental rates chosen in this thesis are adequate estimates.

E. THIRD OBJECTIVE: ANALYZE LA MESA'S NET INCOME

1. Simulation of a Revitalization Schedule

As previously mentioned, most of La Mesa's current inventory was built under the Wherry and Capehart construction programs during the 1950's and 1960's. The CBO says that a unit has exceeded its useful service life and needs revitalization when it reaches an age of 35 years. Therefore, all of the Wherry units (42 years old) require immediate revitalization. In order to determine revenues based on the number of units available for renting over the next twenty years, as well as to estimate the cost of La Mesa's revitalization efforts, a revitalization schedule is necessary.

The current Navy Phase I plan includes only one-third of the 449 Wherry units. To complete the Wherry project, this thesis assumes that it is sufficient to break the balance of the project into two additional construction phases. All other housing projects after the Wherry project will begin revitalization at the beginning of their 36th year of service in order to stay consistent with the CBO recommendation.

Using Phase I as a model, each phase is broken up into three building periods of eight months each. Like Phase I, only one-third of the units in each phase will be unavailable for renting at any time during the phase. Table 22 is a simulated revitalization schedule from these assumptions. The totals at the bottom of the table represent the number of units that will be available for rent each year.

TABLE 22-LA MESA'S SIMULATED REVITALIZATION SCHEDULE

YEAR	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
TYPE OF UNIT																				
Senior Officer							XXX	XXX												
Wherry																				
Phase I		XXX	XXX																	
Phase II				XXX	XXX															
Phase III						XXX	XXX													
Capehart																				
Phase IV						XXX	XXX													
65 Townhouse																				
Phase V							XXX	XXX												
69 Townhouse																				
Phase VI										XXX	XXX									
AVAILABLE	835	835	843	843	793	793	832	832	890	890	851	851	890	890	890	890	890	890	890	890

2. Determination of La Mesa's Net Income

In order to estimate La Mesa's income over a 20 year period the following assumptions were made:

1. La Mesa's inventory does not change.
2. Demand and occupancy remain constant therefore, the number of units rented each year is derived from the number of units available (after revitalization) as shown in Table 22.
3. The distribution of officer ranks among the different types of quarters remains constant.
4. La Mesa's housing management will install utility meters in all units and begin charging individual tenants for their consumption (\$1,691 per tenant for the purposes of this thesis).
5. All revenues and costs are in FY 1994 dollars.

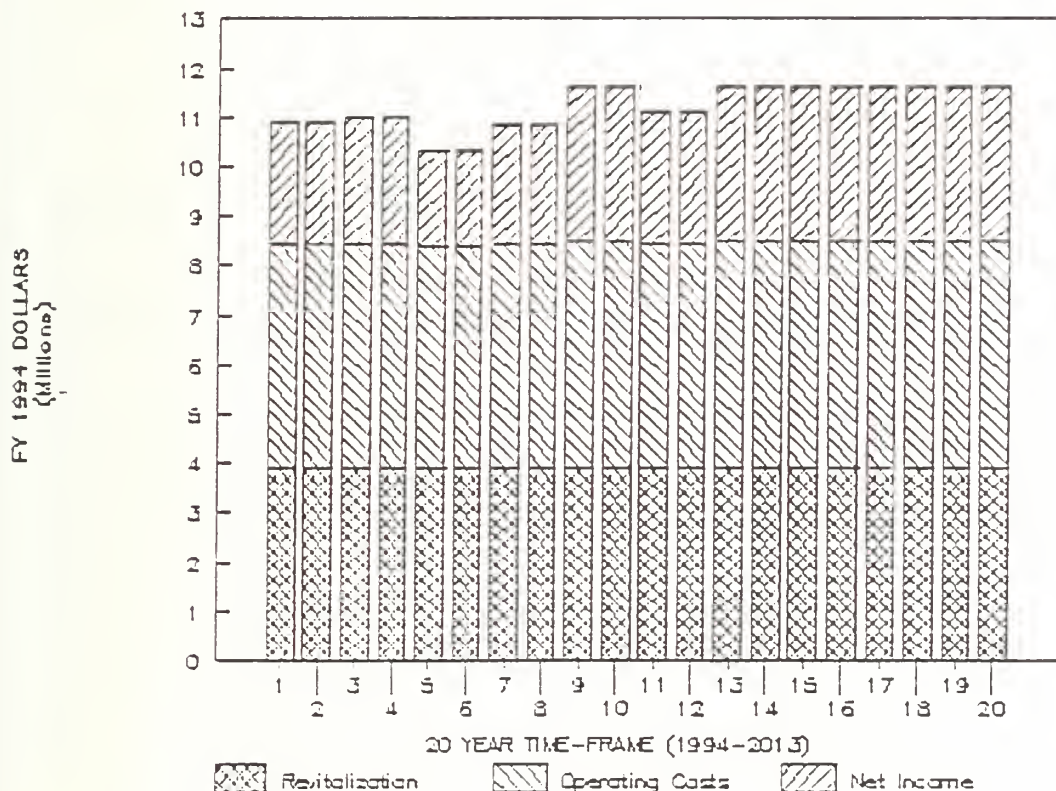
Based upon these assumptions, this thesis simplifies La Mesa's expected annual income by taking the estimated annual revenue from Table 20 (\$10,268,004) and dividing this amount by the current number of units occupied (813) in order to obtain an average income per unit (\$12,630).

Because the number of units available for rent varies from year to year, by using this average income per unit it is possible to estimate La Mesa's income over a 20 year period.

Using the estimated number of units available for rent, the estimated annual rental revenue, the revenue from utility charges to tenants and the estimated annual costs it is possible to analyze La Mesa's ability to operate under the new system. The following graph shows that according to these assumptions, La Mesa would yield positive net incomes over the 20 year time-frame and therefore it should be able to operate.

DISTRIBUTION OF REVENUES

La Mesa Village, 1994



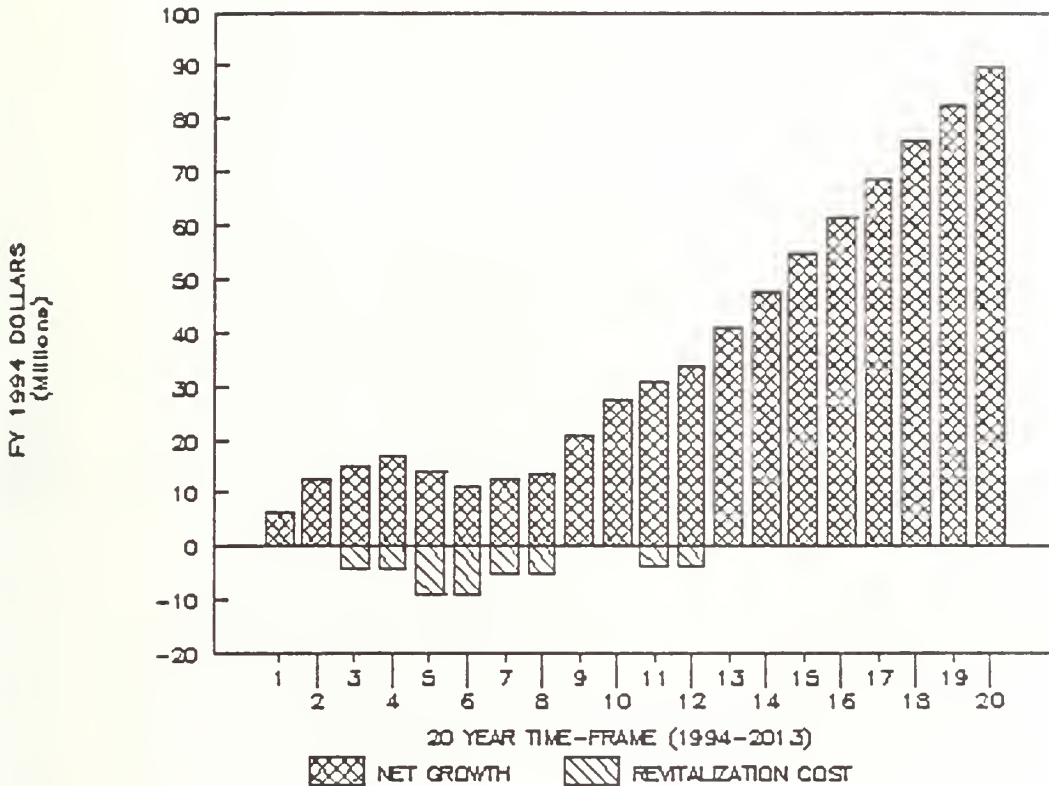
F. FOURTH OBJECTIVE: ANALYZE LA MESA'S CASH FLOW

According to the CBO recommendation in order to afford the cost of rebuilding and revitalizing its inventory, a military family housing program would collect all revenues received through rents and place them into a revolving fund similar to the DoD Defense Business Operations Fund (DBOF). It should be noted, however, that this revolving fund exists on paper only. A revolving fund is not kept with a financial institution, but rather all revenues are returned to the Treasury. A housing program is allowed to make expenditures out of the Treasury up to, but not exceeding its revolving fund balance. Expenditures from a fund in excess of its balance are legal violations.

For the purposes of this thesis, La Mesa's annual net contributions to this revolving fund will be simplified by using the \$4,400 annual cost of capital per unit and any positive net income left over from its operations. In reality, all revenues and all expenses pass through the fund. From this revolving fund will be subtracted out the cost of revitalization as scheduled in Table 22. The following graph shows that according to these assumptions, La Mesa's revolving fund sustains positive net growth, therefore, from a cash flow perspective, a rental system at the Naval Postgraduate School can be expected to succeed.

REVOLVING FUND NET GROWTH

La Mesa Village, 1994



G. FIFTH OBJECTIVE: DETERMINE THE NET LOSS/NET GAIN TO THE TAXPAYER

1. Introduction

The shift to a rental system is actually a change in the way the government funds housing. As was discussed in Chapter III, the system is currently funded through the Family Housing, Navy and Marine Corps (FH,N&MC) Appropriation. A rental plan would do away with this appropriation and instead fund housing by giving all servicemembers housing allowances, thus increasing the Military Personnel, Navy (MPN) Appropriation. Although this thesis shows that La Mesa Village should be able to operate under a rental system, the real question to be answered for policymakers is whether the increase in the MPN account will be larger than the reduction in the FH,N&MC account. In essence, is this system more cost-effective to the federal government and the taxpayer?

2. Estimated Increase to the MPN Account

The first objective in answering this question is to determine how much the MPN account would increase. In order to simplify the calculations, an average allowance per tenant was calculated and then used over the twenty year period. This should be a fair assumption because over twenty years, although there is bound to be some variance, the rank structure of tenants at La Mesa will probably remain fairly constant. Table 23 shows the increase in the MPN account from La Mesa's tenants.

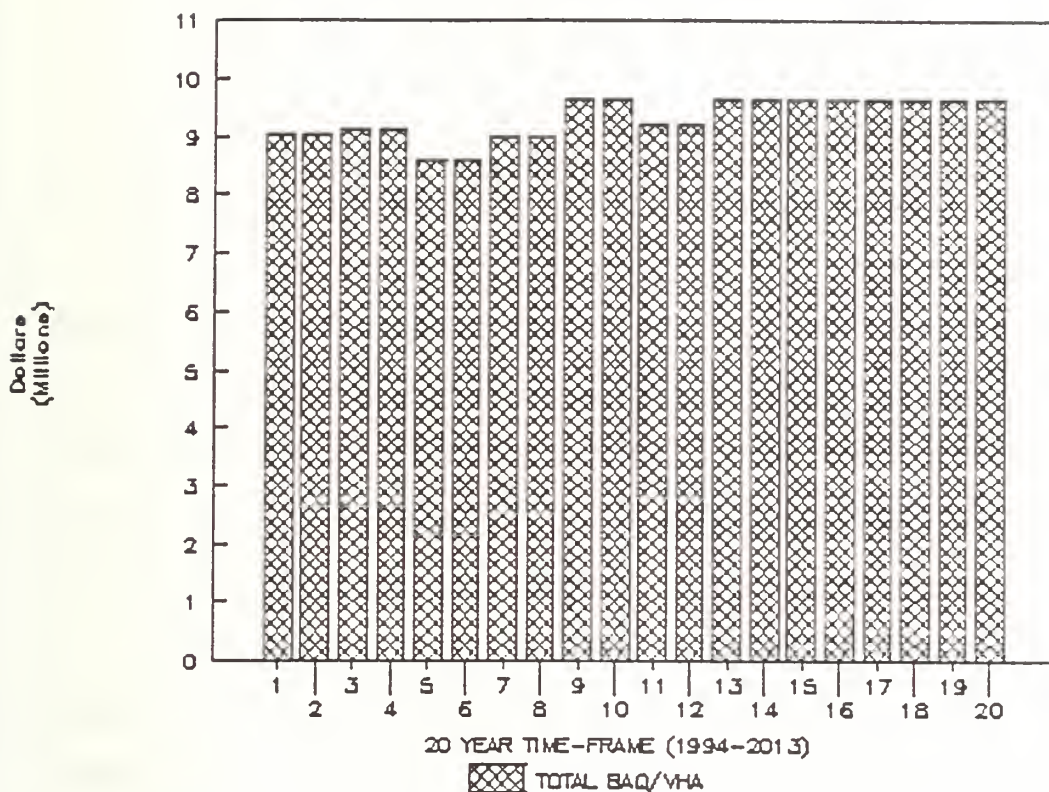
TABLE 23: INCREASE IN THE MPN ACCOUNT FOR LA MESA TENANTS

Unit Type	# of Units	RANK	BAQ	VHA	TOTAL	YEARLY TOTAL
06	10	06	810	449	1,259	151,080
	1	05	780	478	1,258	15,096
04-05	1	06	810	449	1,259	15,108
	189	04	688	449	1,137	2,578,716
	117	03	569	366	935	1,312,740
01-03	15	04	688	449	1,137	204,660
	479	03	569	366	935	5,374,300
TOTAL	812					\$9,651,700

When the total \$9,651,700 is divided by the current number of military tenants the average yearly increase to the MPN account amounts to \$11,886 per tenant. The number of units available after revitalization varies from year to year, therefore, this per tenant amount can be used to estimate the BAQ and VHA allowances received by La Mesa's military tenants. The following graph shows that the expected MPN expenditures in FY 1994 dollars over a 20 year period would cause an increase to the MPN account of \$176,760,000.

INCREASE IN THE MPN ACCOUNT

La Mesa Village, 1994



3. Estimated Decrease to the FH,N&MC Account

The FH,N&MC account is actually made up of two funds, Operations & Maintenance and Construction. For La Mesa, this amount is the sum of its operating and revitalization budgets over the next twenty years. The Operations & Maintenance account is relatively easy to estimate for the next 20 years. La Mesa received \$4,959,000 last year and can be expected to receive approximately the same amount in FY 1994 dollars over the next 20 years.

The Construction part of this appropriation is much more difficult to estimate. Under the current system the DoD does not set aside any funds for future construction. In fact, DoD's revitalization, which is underfunded by an estimated \$11 billion, is completely dependent upon future Congressional appropriations. According to the

CBO, the Department of Defense should be spending approximately \$880 million each year to revitalize its current inventory. As Table 4 shows, however, the DoD has not been meeting this figure.

In order to remain consistent with the CBO study, this thesis estimates future construction expenditures using the same assumptions used in the previous objective. Using the simulated revitalization schedule and a cost of \$60,000 per unit, the total cost of revitalizing La Mesa's inventory equals \$42,720,000. Totaling the expected Operations & Maintenance expenditures and the Construction expenditures yields a total cost of \$141,900,000.

4. Determination of Any Net Gain or Net Loss to the Taxpayer

Totaling both the MPN expenditures (-\$176,760,000) and the FH,N&MC savings (\$141,900,000) reveals that giving all personnel at the Naval Postgraduate School housing allowances would result in a net loss to the government of approximately \$34,860,000. Although La Mesa would be \$34,860,000 more costly over 20 years to operate under a rental system than under the current system, as was shown in Chapter IV, the CBO believes that the increases in the MPN account will be more than offset by the savings from other housing closures.

By slowly reducing the Department of Defense's inventory, the CBO believes that not only will the remaining housing complexes be operated in a more efficient manner, but also, will yield substantial savings to the DoD. The CBO believes that only 25% of DoD's current housing will remain after implementing a rental system. Therefore, if the CBO projections are correct, the military family housing program at the Naval Postgraduate School would likely be one of those remaining.

VI. SUMMARY AND CONCLUSIONS

A. SUMMARY

As was shown in Chapter II, the Department of Defense has historically relied upon the private sector for housing its armed forces. Despite the large standing Army created by the Cold War and the incentives required for an All-Volunteer force, the DoD still abides by this policy. As was shown in Table 5, two-thirds of all military families live in the private sector.

However, as was discussed in the Introduction, the current fiscal environment is causing the Department of Defense to seek cost-saving alternatives. The Congressional Budget Office and other organizations have determined that the DoD's military family housing program is one program that could yield savings. One recommendation, and the focus of this thesis, was to institute a rental market within DoD's military family housing program.

B. CONCLUSIONS

This thesis explored this option by simulating a rental program at one housing complex, La Mesa Village at the Naval Postgraduate School. After investigating La Mesa's costs and setting initial rental rates this thesis concludes that a rental program at La Mesa would provide sufficient net income and cash flow to continue to operate. It was shown that the program would cause a net loss to the government when compared to the current program, when applied to the La Mesa housing

complex. This net loss is not a relevant figure for evaluating the effect of a DoD wide rental program since the CBO projects a substantial reduction in housing inventory under the rental plan and concludes that substantial savings would be realized on those complexes closed.

Although the major focus of this thesis was to investigate the ability of one housing program to sustain its operations under a rental system, several other findings were revealed during this study that may prove beneficial to future researchers.

C. FINANCIAL IMPLICATIONS FOR FUTURE POLICYMAKERS

The Department of Defense is the world's largest landlord with over 300,000 units in the United States. Unfortunately, the DoD faces a significant challenge in the years ahead because, as was pointed out in Chapter II, most of this inventory was built during the 1950's and 1960's. Assuming the CBO's recommendation is adopted by DoD, the CBO indicates that only 25% of this large inventory are likely to be able to compete with the private sector.

One observation made during this thesis was that because most DoD complexes have inventories that require immediate revitalization, many housing programs will be confronted with a cash flow situation similar to La Mesa's. In order to fund immediate revitalization, large revolving fund cash balances will be required very early. As a result, recently constructed housing complexes or complexes that have recently undergone revitalization will have a distinct advantage over those complexes that have not.

Another observation was that La Mesa is not a typical housing program. Its tenants are all officers and therefore the potential

revenues from rents, which are based in part upon current BAQ and VHA allowances, is very high. Other housing programs, made up of a higher percentage of enlisted personnel, may not be able to realize the high revenue figures attainable at La Mesa and therefore may not be able to cover the costs associated with immediate revitalization. It is also possible that higher allowance levels, in states such as California, may result in housing programs in high cost areas achieving higher revenue figures than those programs in low cost areas.

Obviously, high net income figures give the housing management at La Mesa distinct advantages. As was shown in Chapter V, higher net income figures drive up the growth of La Mesa's revolving fund. This cushion allows for any unexpected losses from operations or from the initial rental rates being too high. Based upon La Mesa's expected net income and immediate revitalization needs, it appears that annual average revenues could go as low as \$10,500 per unit and still break even.

Conversely, however, rapid growth in La Mesa's revolving fund may not go unnoticed by Navy and DoD budgeteers. As was experienced during the early stages of the DBOF, excess funds lying unused in a revolving fund are prime targets when additional funds are needed elsewhere in the Department of the Navy. To protect these funds, a possible strategy by La Mesa's housing management might be to use the large corpus of funds to begin early demolition and reconstruction of its aging units.

Another strategy might be to use the additional funds to make quality of life improvements for its tenants. These improvements will likely be viewed as necessary if a military housing program is to remain competitive with private sector housing. A third option might be to reduce its rental rates in order to reduce net income thus keeping its

revolving fund more in line with its required cost of capital. This would also serve to reward tenants for living in very old quarters and might counteract the negative effects associated with changing the current system.

D. FOLLOW-ON RESEARCH

The study of implementing a rental system within a current military family housing program has generated a number of related issues that were not addressed in this thesis. These issues may serve as possible topics for further study.

Although this study makes utility consumption reductions as a result of changing to a rental system, the thesis did not explore all of the possible operating cost changes. One possible research topic might be to determine actual implementation procedures for La Mesa's housing management. Specific changes such as revised management policies, staff changes, rent collection, meter installation, and maintenance schedules could be addressed. After determining specific procedures for implementing this system it would be possible to make a more detailed breakdown of the changes in operating costs.

In order to get an accurate estimate for initial rental rates, a detailed study on officer preferences for different types of housing would be essential. As mentioned in this thesis, the DoD does not have an effective method for determining the value of its current housing inventory. The existence of waiting lists is an indication that military families value military housing. However, exactly how much more a family values DoD housing over private sector housing is unclear.

A study into why military families value MFH and how to place a dollar estimate on this would be extremely beneficial.

A detailed analysis of the supply and demand for military housing on the Monterey Peninsula would also be essential before deciding to actually implement a rental system in any housing program. If a housing complex is unable to compete with the private sector it would be prudent to have an assessment of the local market's ability to adequately and affordably house a command's military families.

The CBO study discusses the problems in the current VHA program. The current VHA system determines allowance levels based upon housing expenditures instead of housing prices which, as was discussed in Chapter III, tends to reduce allowance levels in high cost areas. A useful study might be to analyze the magnitude of this inequity and recommend possible solutions for setting rates to prices.

APPENDIX A:PHASE I REVITILIZATION FOR 102 WHERRY UNITS

(in FY 1994 dollars)

DESCRIPTION	UNIT	
	<u>COST</u>	<u>TOTAL</u>
repair exterior dry rot	702	17,901
repair interior dry rot	15,575	72,293
repair damaged rood eaves	350	23,205
repair closet doors and track	867	88,470
retexture and repaint interior	2,472	252,121
repair exterior stucco cracking/damage	9,274	945,906
lead paint abatement	4,972	507.140
replace existing roofing and flashing	11,605	1,183,733
renovate interior electrical system	1,092	111,369
replace doorbell chimes	197	20,082
replace existing incandescent light fixtures	1,074	109,589
remove existing exposed telephone and CATC	995	101,533
bring existing service risers up to code	195	64,513
correct grounding code violations	1,865	132,388
remove excess exterior telephone/CATV cables	200	20,365
provide new entry rear doors	1,920	195,841
TOTAL REPAIR COST FOR 102 UNITS	\$39,355	\$3,846,449

APPENDIX B:LA MESA'S FY 1994 BUDGET

		TOTAL (\$ millions)
A	OPERATION	ITEMIZED
	A1 MANAGEMENT	
	A1A Family Housing Office	355.5
	Salaries	334,281
	Equipment	18,899
	Travel	2,300
	A1B Administrative Support	177.8
	Non-DBOF activities	
	Amount charged to MFH	
	supply services	107,400
	comptroller	48,800
	civilian personnel	2,000
	administrative	19,600
	Total BP-11	<u>533.3</u>
	A2 SERVICES	
	A2A Refuse Collect & Disposal	119.8
	station forces	13,726
	contract	88,362
	containers	3,215
	over-sized items	14,528
	A2B Fire Protection	240.6
	A2C Police Protection	170.3
	A2D Entomological Services	31.5
	A2E Custodial Services	0.0
	A2F Snow Removal	0.0
	A2G Street Cleaning	6.6
	A2H Municipal Type Services	0.0
	A2I Other	0.0
	Total BP-10	<u>568.9</u>
A3	FURNISHINGS	
	A3A Control, Moving & Handling	11.7
	A3B Maint & Repair, Furniture	0.0
	A3C Replacement, Furniture	0.0
	A3D Initial Issue, Furniture	0.0
	A3E Maint & Repair, Equipment	31.5
	A3F Replacement, Equipment	172.6
	A3G Initial Issue, Equipment	0.0
	Total BP-14	<u>215.8</u>
	GRAND TOTAL OPERATIONS	1,318.0
B	UTILITIES	
	B1A Electricity	599.9
	877	547,348
	1 (Admiral)	1,127
	12 (NPS)	29,114

street lights	1,092	
ownership	20,073	
service	1,140	
B1B Gas (877+admiral)		730.2
B1C Fuel Oil		0.0
B1D Water		334.6
B1E Sewage		86.0
B1F Other (Steam)		0.0
Total BP-12		<u>1,750.7</u>
C LEASE RENTS & PERMITS		NONE
D MAINTENANCE		
D1 Maintenance of Dwellings		
D1A Service Calls		78.1
D1B Routine Maintenance		348.5
station forces	236,790	
contract	13,959	
D1C Change Of Occupancy		139.1
D1D Self Help (contractor mgmt costs)		35.0
D1E Minor Repair & Replacement		119.8
station forces	51,614	
contract	11,531	
installed equipment	24,600	
dishwasher	10,150	
hot water tnk	8,950	
floor tiles	0	
garbage disp.	3,700	
mini-blinds	1,800	
D1F Painting Exterior		8.5
station forces	4,865	
contract	152,239	
D1G Painting Interior		160.7
Total		889.7
D2 Maintenance & Repair Ext. Utilities		73.8
D3 Maintenance & Repair ORP		
D3A Grounds		140.6
station forces		
grounds maint.	7,924	
other	8,903	
contract		
improved grounds	100,306	
tree removal	23,476	
D3B Surface Areas		4.7
repair roads, sidewalks		
D3C Other Real Property		86.8
Total		232.1
GRAND TOTAL MAINT BP-20		<u>1,195.6</u>
E REPAIRS		NONE
F TOTAL MAINTENANCE, REPAIRS AND QUARTERS CLEANING		1,195.6
G GRAND TOTAL (A+B+C+D+E)		<u>4,264.3</u>
R REIMBURSEMENT		105.3

APPENDIX C:1994 BASIC ALLOWANCE FOR QUARTERS RATES

Grade	Dependents		
	Without	Partial	With
0-10	730.50	50.70	899.10
0-9	730.50	50.70	899.10
0-8	730.50	50.70	899.10
0-7	730.50	50.70	899.10
0-6	670.20	39.60	809.70
0-5	645.30	33.00	780.30
0-4	598.20	26.70	687.90
0-3	479.40	22.20	569.40
0-2	380.10	17.70	486.30
0-1	320.10	13.20	434.40
0-3E	517.50	22.20	611.70
0-2E	440.10	17.70	552.00
0-1E	378.30	13.20	510.00
W-5	607.50	25.20	663.90
W-4	539.70	25.20	608.70
W-3	453.60	20.70	558.00
W-2	402.60	15.90	513.30
W-1	337.20	13.80	444.00
E-9	443.40	18.60	584.10
E-8	407.10	15.30	538.50
E-7	347.40	12.00	500.10
E-6	314.70	9.90	462.30
E-5	290.10	8.70	415.50
E-4	252.30	8.10	361.50
E-3	247.80	7.80	336.30
E-2	201.30	7.20	320.10
E-1	179.10	6.90	320.10

APPENDIX D:1994 VHA RATES FOR MONTEREY, CALIFORNIA

WITH DEPENDENTS		WITHOUT DEPENDENTS
E-1	149.09	140.52
E-2	167.72	157.94
E-3	195.03	176.12
E-4	205.68	186.03
E-5	229.59	208.20
E-6	261.55	246.07
E-7	308.13	294.46
E-8	307.09	291.43
E-9	328.39	328.44
W-1	279.45	286.34
W-2	347.71	342.22
W-3	364.96	379.21
W-4	418.65	432.61
O-1E	283.21	270.25
O-2E	283.09	310.79
O-3E	370.55	381.95
O-1	231.78	245.73
O-2	258.74	281.59
O-3	331.64	307.79
O-4	363.54	390.50
O-5	361.68	395.41
O-6	383.39	371.42
O-7	324.29	311.13

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